REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSP
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WDM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102603	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS + — | 3 PLACE DECIMALS + — | ANGLES + —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	3 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NC. (REF)	AUTHORIZATION ECP. NC. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
A.C. METZGER
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MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	9 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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A.C. METZGER
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MANNED
SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
APOLLO G&N
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SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE — | SHEET 3 OF 12

CJ 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES + + + - - -	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OcT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	W. KUPFER MIT APPROVAL	SCALE NONE SHEET 5 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RU RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 12

REVISIONS					
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILLATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3/10/67
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CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 7 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
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	CG	REVISION STATUS CHANGED		30 Nov 67	WSM PB
	CH	*REVISION STATUS CHANGED*		13 DEC 67	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607, 2 SPARES S/N 10,12
		G & N I/C HARNESS "A"			6010659		6010670	
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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SIZE D
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1021200
SCALE NONE
SHEET 8 OF 12

REVISIONS					
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	CD	REVISION STATUS CHANGED	—	9 NOV 67	JJJ
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60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 Nov 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE · SHEET 9 OF 12

REVISIONS

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051 2007238-061	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,210S
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 608S
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 12

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
CF		THIS SHEET ADDED PER TDRR34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204

CF **THIS SHEET ADDED**

NEXT ASSY	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
USED ON	DO NOT SCALE THIS DRAWING	DRAWN J JANOWIAK DATE 15NOV67 CHECKED APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)	
APPLICATION	MATERIAL	A.C.METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D	CODE IDENT NO. 99974
	APPROVAL		SCALE NONE	1021200
				SHEET 12 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N C
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP 63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP 232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

ND 1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
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ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 6
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M MURLEY
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	BP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED 5 NOV 67
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CONTRACT NAS 9-497
A.C. METZGER
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W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
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	CK	REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS ~~FOR~~ STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102666	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP 388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	6102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RWM
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	*REVISION STATUS CHANGED*		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER, SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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	CG	REVISION STATUS CHANGED		30 Nov 67	WSM PB
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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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	CC	THIS SHEET ADDED PER TDRR 34856		27 OCT 67	JJS
	CD	REVISED PER TDRR 34863	—	9 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JJS
	CH	REVISIOll STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED— ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	20'8601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECR 585,587&605	2018601-091	8102734 FOR A4 (AS POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

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AC ELECTRONICS DIVISION
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CONTRACT NAS 9-497
A.C METZGER
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E. AUSTIN
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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	URK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP 20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					-071		-101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
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1021200
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SHEET 1 OF 12

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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SIZE D
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SHEET 2 OF 12

REVISIONS					
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26.0	MOISTURE PROOFING	PSA						
26.1			0102628	ECP-206		8102650		
26.2					1007257-031		NO CHANGE	G & N 20
26.3					1007257-051			G & N 17
26.4					1007257-061			G & N 12
					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING							
27.1			0102628	ECP-206		8102651		
27.2					1007257-031		NO CHANGE	G & N 20
27.3					1007257-051			G & N 17
27.4					1007257-061			G & N 12
27.5	MOISTURE PROOFING				1007570-021			G & N 110 THRU 124
		TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES							
33.1		FRAME ASSY NAV BASE	0102611	ECP-219		8102625		
33.2			↑	↑	1899982-000	↑	1899982-011	G & N 12
33.3					↑		↑	50 SERIES SPARE
33.4								100 SERIES SPARE
33.5					↓		↓	G & N 121
33.6					1899982-000		1899982-011	G & N 122
33.7		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.8					1011000-007		1011000-007	50 SERIES SPARE
33.9					2011000-001		2011000-001	G & N 121
33.10					2011000-021		2011000-022	G & N 122
33.11					2011000-021		2011000-022	100 SERIES SPARE
33.12		PSA TOE CAP			1008535		1008535	G & N 12
33.13					1008535		1008535	G & N 121
33.14					1008535		1008535	G & N 122, 123, 124
33.15		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.16					↑ -161		↑ -161	50 SERIES SPARE
33.17					-141		-151	100 SERIES SPARE
33.18			↓	↓	↓ -131	↓	↓ -131	G & N 121
			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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DRAWN W. S. MUELLER DATE 27OCT67
CHECKED
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CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

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	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		5-JAN 68	

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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVC & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 2C
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
35.7		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2					1899950-221		1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662		1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY						
39.2							1899950-171	G & N 109, 111
39.3							1899950-181	G & N 121
39.4							1899950-191	G & N 123
39.5							1899950-211	G & N 122 100 SPARE
39.6							1899950-221	G & N 20
39.7							1899950-231	G & N 12
			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM						
41.1				ECP-359				
41.2		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500•081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499	2007222-071	8102712	2007222-101	G & N 203 & 204
				ECP-515		8102718		
				ECP-499		8102712		G & N 205 & 2
				ECP-515	2007222-091	8102718	2007222-161	SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499	2007222-081	8102712	2007222-131	G & N 603,605,606
				ECP-515		8102719		& 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 12

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 6	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	*REVISION STATUS CHANGED*		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

CC **THIS SHEET ADDED**

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 9 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	PEVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
63.2					2007238-021		2007238-041	
				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007238-021	8102748	2007238-061	
64.3					2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.4					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.5					2007222-101	8102743	2007222-191	203,204
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2C07235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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A.C. METZGER
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E. AUSTIN
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 12

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
72.0	REMOVAL OF. IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202

CF THIS SHEET ADDED

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN J JANOWIAK DATE 15 NOV 67 CHECKED APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
		MATERIAL	A.C.METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO 99974 1021200
		APPROVAL		SCALE NONE SHEET 12 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	URK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.6. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	—	ECP-25	—	8102602	—	——
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	—	8102622	—	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 9
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

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± ± ±
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	URK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	——		ECP-306	——	——	——	——
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 3 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	BP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

CC **THIS SHEET ADDED**

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SHEET 9 OF 12

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
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	CN	REVISION STATUS CHANGED		17 JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2					1899950-221		1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662		1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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1021200
SCALE NONE
SHEET 5 OF 12

1021200

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.S.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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SHEET 8 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JDM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MB
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MB
	CP	REVISION STATUS CHANGED		20 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014626-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102645	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903 051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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NEXT ASSY	USED ON
APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 1 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007420-011		1007420-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
REVISIONS					
	CC	THIS SHEET ADDED PER TDRR 34854		27 Oct 67	JSM
	CD	REVISED PER TDRR 34863	—	7 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2 JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.S.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607),12(LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP 585,587&605	2018601-091	8102734 FOR A4 (A5	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061	POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

CC THIS SHEET ADDED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 Oct 67 CHECKED APPROVAL CONTRACT	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL	A.C METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE · SHEET 11 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
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	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	REK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY			1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2	—	G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S.MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
A.C.METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 12

					REVISIONS		
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ		
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	CP	REVISION STATUS CHANGED		24 JAN 68	JRK		
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK		

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	——		ECP-306	——	——	——	——
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ ___ + ___ + ___
− − −
DO NOT SCALE THIS DRAWING
MATERIAL ______
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED ______
APPROVAL ______
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL ______
M. MURLER
MIT APPROVAL ______

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 3 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN W.S. MUELLER DATE 27OCT67 CHECKED APPROVAL	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
DO NOT SCALE THIS DRAWING	CONTRACT NAS 9-497	
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	M MURLEY MIT APPROVAL	SCALE · SHEET 4 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC **THIS SHEET ADDED**

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 9 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 Oct 67	JSM
	CD	REVISED PER TDRR 34863	—	9 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JSM
	CH	REVISIOII STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	MS.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-585,587&605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 11 OF 12

CR 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		5 NOV 67	J J J
CG		REVISED PER TDRR 34914		30 NOV 67	JJM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTV
CL		REVISED PER TDRR 35117		2-JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	[illegible]
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION ~~DRIVE~~ TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE.*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204 THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 12

1021200 CA

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BY	REVISION STATAUS CHANGED		15 SEP 67	9/C
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ Y.M.
	BU	REVISION STATUS CHANGED		29 AUG 67	B. Y.M.
	BV	REVISED PER TDRR 34374		30 AUG 67	DG Y.M.
	BW	REVISION STATUS CHANGED		1 SEP 67	RLP

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BM	REVISION STATUS CHANGED		2 AUG 67	AN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISION STATUS CHANGED		21 AUG 67	9/C
	BS	REVISION STATUS CHANGED		23 AUG 67	9/C

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	F	REVISION F REPLACES REVISION E WITH REDRAW PER TDRR 24706		14 DEC 65	
	G	REVISED PER TDRR 25186		14 JAN 66	RLP
	H	REVISED PER TDRR 25358		26 JAN 66	LK
	J	REVISED PER TDRR 25469		2 FEB 66	DKD
	K	REVISED PER TDRR 26141		15 FEB 66	RLP MEM
	L	REVISED PER TDRR 26434		22 FEB 66	DKD
	M	REVISED PER TDRR 26436		24 FEB 66	DKD
	N	REVISED PER TDRR 26513		25 FEB 66	J.H.P.
	P	REVISED PER TDRR 26570		3 MAR 66	R.W.T.
	R	REVISION STATUS CHANGED	TDRR 26663	7-MAR 66	B.
	S	REVISION STATUS CHANGED	TDRR 26314	8 MAR 66	PHG
	T	REVISION STATUS CHANGED		1 APR 66	JJJ JRC
	U	REVISION STATUS CHANGED		4-APR-66	B.
	V	REVISION STATUS CHANGED		12 APR 66	RLP RWH
	W	REVISION STATUS CHANGED		18 APR 66	JJJ
	Y	REVISION STATUS CHANGED		17 MAY 66	JJJ
	Z	REVISED PER TDRR 28808		19 MAY 66	JJJ JAC
	AA	REVISION STATUS CHANGED		1 JUN 66	JIM P
	AB	REVISION STATUS CHANGED		10 JUN 66	R.W.T.
	AC	REVISION STATUS CHANGED		15 JUN 66	LK
	AD	REVISION STATUS CHANGED		8 JUL 66	RWH
	AE	REVISION STATUS CHANGED		21 JULY 66	J.E.G. JKS
	AF	REVISION STATUS CHANGED		16-AUG 66	G RW
	AG	REVISION STATUS CHANGED		29 SEP 66	JJB RLW
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		11 OCT 66	JJB RLW
	AL	REVISION STATUS CHANGED		20 OCT 66	T.D. RLW
	AM	REVISION STATUS CHANGED		24 OCT 66	RLW
	AN	REVISION STATUS CHANGED		7 NOV 66	LL RLW
	AP	REVISION STATUS CHANGED		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF RC
	AW	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR
	BB	REVISION STATUS CHANGED		12 JAN 67	DR
	BC	REVISION STATUS CHANGED		12 JAN 67	DR
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISION STATUS CHANGED		25 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RN RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		13 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↓	1007100	8102601	1007257-011	G&N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G&N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G&N 17, 12
3.0	MOISTURE-PROOFING G&N 20	—	0102601	ECP-20	—	8102613	—	G&N 20
3.1		COUPLING DISPLAY UNIT		↓	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
				↓				
3.2		D&C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G&N 20
4.1		G&N HARNESS & END CONNECTOR		↓	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↓	—		1899950-031	G&N 8
5.2				↓	—		1899950-041	G&N 20
5.3				↓	—		1899950-051	G&N 17, 12
6.0	CHANGE FROM 40 TO 100 SECOND TIME DELAY	D&C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G&N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASS'Y	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110, 111, 121 THRU 124 + SERIES 100 SP.
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G&N 17, 12, 50 SPARE
					1001500-021		1001500-051	G&N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARES
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D&C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G&N 17 QUAL. RETROFITS	G&N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASS'Y	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G&N SYS.		ECP-265		8102644		
13.1		G&N IND. CON. PANEL	0102625	ECP169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G&N IND. CON. PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110, 111, 121 THRU 124 "100" SPARES G&N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50" SP. 110, 111, 121 THRU 124 "100" SPARES G&N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50" SP. 110, 111, 121 THRU 124, 100 SPARES
13.5		D&C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G&N 12
					-051		-081	"50" SPARE
					-071		-101	G&N 110
					-061		-091	G&N 111, 121 THRU 124 & "100" SPARES
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G&N IND. CONT. PANEL	0102625	ECP-277	SEE ITEM 13.1			G&N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSEMBLY		↓	1899950-041		1899950-121	G&N 20
15.2				↓	1899950-051		1899950-091	G&N 12 & SPARE
15.3				↓	1899950-071		1899950-111	G&N 111, 109, & SPARE
15.4				↓	1899950-061		1899950-131	G&N 121
15.5				ECP-211	1899950-081		1899950-141	G&N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSEMBLY	0102629	ECP-243	1014664-011	8102647	1014664-021	110, 111, 121 THRU 124 AND SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN Orzel DATE 6 Dec 65
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 8

1021200

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	CA	*REVISION STATUS CHANGED*		26 SEP 67	JRK RWH

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BY	REVISION STATUS CHANGED		15 SEP 67	
	BZ	REVISION STATUS CHANGED		20 SEP 67	

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BW	REVISION STATUS CHANGED		1 SEP 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM - BLOCK I SERIES 50.	G&N SYSTEM		ECP 169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP 169		8102623	1021255-011	G&N 12 "50" SPARE G&N 20
17.2		G&N INDICATOR CONTROL PANEL	0102622	ECP169,265,&277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
			0102622	ECP 169	1014578-041	8102641	1014578-041	G&N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM - BLOCK I SERIES 100	G&N SYSTEM		ECP 169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP 169		8102632	1021255-021	G&N 110, 111, 121, 122, 123, 124 "100" SPARES.
18.2		G&N INDICATOR CONTROL PANEL	0102622	ECP169 & 265	1014664-011	8102638	1014664-021	G&N 110, 111, 121, 122, 123, 124 "100" SPARES.
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP250,253,84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASS'Y	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASS'Y	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASS'Y	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASS'Y	0102626	ECP 225 & 270	1015086-000	8102646	1015086-011	~~110, 111, 109,~~ 121, 122, 123, 124 SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTUREPROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP 266, 268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G&N 109, 110, 111
					1001500-061		1001500-091	121, 122, 123, 124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM.	OPIICAL UNIT	0102635	ECP 328	1011000-006	8102657	1011000-006	G&N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASS'Y	0102632	ECP 209	1014664-021	8102654	1014664-031	110, 111, 121, 122, 123, 124 AND SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP 267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12 AND SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP 267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU
26.0	MOISTURE PROOFING	PSA	0102628	ECP 206		8102650		
26.1					1007257-031		NO CHANGE	G&N 20
26.2					1007257-051			G&N 17
26.3					1007257-061			G&N 12
26.4					1007570-021			G&N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP 206		8102651		
27.1					1007257-031		NO CHANGE	G&N 20
27.2					1007257-051			G&N 17
27.3					1007257-061			G&N 12
27.4					1007570-021			G&N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP 206	1007585-011	8102651	NO CHANGE	G&N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP 225 & 270	1015086-000	8102655	1015086-021	G&N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP 225	1015086-000	8102656	1015086-031	G&N 109

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	P	REVISED PER TDRR 26570 THIS SHEET ADDED.		3 MAR 66	R.W.T.
	R	*REVISED PER TDRR-26663*		7 MAR 66	B.
	S	REVISED PER TDRR 26819		8 MAR 66	PHG
	T	REVISED PER TDRR 27452		1 APR 66	JJJ JAC
	U	*REVISED PER TDRR 27457*		4-APR-66	B.
	V	REVISED PER TDRR 27825		12 APR 66	RP RWH
	W	REVISED PER TDRR 27840		18 APR 66	JJJ
	Y	REVISED PER TDRR 28757		17 MAY 66	JJJ
	Z	REVISED PER TDRR 28808		19 MAY 66	JJJ JAC
	AA	REVISED PER TDRR 29138		1 JUN 66	JIMP
	AB	REVISION STATUS CHANGED		10 JUN 66	O.W.T.
	AC	REVISION STATUS CHANGED		15 JUN 66	LK
	AD	REVISION STATUS CHANGED		8 JUL 66	RWH
	AE	*REVISION STATUS CHANGED*		21 JULY 66	J.E.G. JRS
	AF	REVISION STATUS CHANGED		16 AUG 66	
	AG	REVISION STATUS CHANGED		SEP 66	JJP
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		10 OCT 66	JJB DPW
	AL	REVISION STATUS CHANGED		20 OCT 66	T.O. RLW
	AM	*REVISION STATUS CHANGED*		24 OCT 66	RLW
	AN	REVISION STATUS CHANGE		7 NOV 66	LL RLW
	AP	REVISION STATUS CHANGE		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	*REVISION STATUS CHANGED*		10 DEC 66	REF JAC
	AW	REVISION STATUS CHANGED		12 DEC 66	RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR
	BB	REVISION STATUS CHANGED		12 JAN 67	DR
	BC	REVISION STATUS CHANGED		13 JAN 67	DR
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISION STATUS CHANGED		25 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		12 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	AN DWN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISION STATUS CHANGED		21 AUG 67	
	BS	REVISION STATUS CHANGED		23 AUG 67	
	BT	REVISION STATUS CHANGED		28 AUG 67	V.M.
	BU	*REVISION STATUS CHANGED*		29 AUG 67	B V.M.
	BV	REVISION STATUS CHANGED		30 AUG 67	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + -
3 PLACE DECIMALS + -
ANGLES + -
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN Fell Turner DATE 3 MAR 66
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE -
SHEET 2 OF 3

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
30.0	~~COATING OF EXPOSED BERYLLIUM PARTS~~		~~0102611~~	~~ECP 219~~		~~8102625~~		~~G&N 12, 20, 121, 122~~
~~30.1~~		~~NAVIGATION BASE ASSY~~			~~1899982-~~		~~NO CHANGE~~	
~~30.2~~		~~OPTICAL UNIT ASSY~~			~~1011000-~~			
					~~2011000-~~			
~~30.3~~		~~PSA, TOE CAP~~			~~1008535~~			
					1007220			
~~31.0~~	~~COATING OF EXPOSED BERYLLIUM PARTS~~	~~NAVIGATION BASE AND OPTICAL UNIT ASSY~~	~~0102611~~	~~ECP 219~~	~~1899950~~	~~8102625~~	~~NO CHANGE~~	~~BLK I (50 & 100) SPARES~~
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	–	–	ECP 306	–	–	–	–
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY.	0102636		6007001-011	8102658	6007001-031	G&N 601, 602.
32.2		INERTIAL MEASURING UNIT ASSY			2018601-011		2018601-031	G&N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY.			6007001-021		6007001-041	G&N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY			2018601-041		2018601-051	G&N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP 219		8102625		
33.1		FRAME ASSY NAV BASE			1899982-000		1899982-011	G&N 12
33.2								50 SERIES SPARE
33.3								100 SERIES SPARE
33.4								G&N 121
33.5								G&N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G&N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G&N 121
33.9					2011000-021		2011000-022	G&N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G&N 12
33.12					1008535		1008535	G&N 121
33.13					1008535		1008535	G&N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G&N 12
33.15					-161		-161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17					-131		-131	G&N 121
33.18					-141		-151	G&N 122
34.0	MOISTURE PROOFING	PSA, FRAMES #1-4	0102637	ECP 269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES #5-10	0102637	ECP 269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP 269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP 269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	Z	THIS SHEET ADDED PER TDRR 28808		19 MAY 66	JJJ JAC
	AA	REVISION STATUS CHANGED		1 JUN 66	JIM P
	AB	REVISED PER TDRR 29363		10 JUN 66	R.W.T.
	AC	REVISED PER TDRR 29507		15 JUN 66	LK
	AD	REVISED PER TDRR 29823		8 JUL 66	RWH
	AE	REVISION STATUS CHANGED		21 JULY 66	J.E.G. IKS
	AF	REVISION STATUS CHANGED		16 AUG 66	RLW
	AG	REVISION STATUS CHANGED		24 SEP 66	JJB
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISED PER TDRR 31245		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		11 OCT 66	JJB DPW
	AL	REVISION STATUS CHANGED		20 OCT 66	TO RLW
	AM	REVISION STATUS CHANGED		24 OCT 66	RLW
	AN	REVISION STATUS CHANGED		7 NOV 66	LL RLW
	AP	REVISION STATUS CHANGED		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR R.W
	BB	REVISION STATUS CHANGED		12 JAN 67	DR R.W
	BC	REVISION STATUS CHANGED		13 JAN 67	DR R.W
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISION STATUS CHANGED		25 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		13 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	AN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISION STATUS CHANGED		21 AUG 67	
	BS	REVISION STATUS CHANGED		23 AUG 67	
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ
	BU	REVISION STATUS CHANGED		29 AUG 67	V.M.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG V.M.
	BW	REVISION STATUS CHANGED		1 SEP 67	RLP
	BY	REVISION STATUS CHANGED		15 SEP 67	
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± –
3 PLACE DECIMALS ± –
ANGLES ± –
DO NOT SCALE THIS DRAWING
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN Janowiak DATE 19 MAY 66
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE –
SHEET 3 OF 8

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP 248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP 248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP 248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP 248	6007001-061	8102663	6007001-051	603, 604, 605, 606 AND SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP 248	6007000-051	8102663	6007000-041	603, 604, 605, 606 AND SPARE
35.5		POWER, SERVO AND TC ASSY, C/M	0102639	ECP 248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP 248	2007200-061	8102664	2007200-051	203, 204, AND SPARE
	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP 407				
		STOWAGE UNIT EYEPIECE			1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124. 111
		CASE - EYEPIECE STOWAGE			1021314-000	8102679	1021314-011	SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	AD	THIS SHEET ADDED PER TDRR 29823		8 JUL 66	$ RWH
	AE	REVISED PER TDRR 29822		21 JULY 66	J.E.G. JRS
	AF	REVISED PER TDRR 30542		16 AUG 66	G RW
	AG	REVISON STATUS CHANGED		24 SEP 66	JJB RLW
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		11 OCT 66	JJB JPW
	AL	REVISION STATUS CHANGED		20 OCT 66	TD RW
	AM	REVISION STATUS CHANGED		24 OCT 66	RLW
	AN	REVISION STATUS CHANGED		7 NOV 66	LL RLW
	AP	REVISION STATUS CHANGED		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	ES RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	ES RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	ES RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR MW
	BB	REVISION STATUS CHANGED		12 JAN 67	DR MW
	BC	REVISION STATUS CHANGED		13 JAN 67	DR MW
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISION STATUS CHANGED		25 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		13 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	AN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	JW
	BR	REVISION STATUS CHANGED		21 AUG 67	
	BS	REVISION STATUS CHANGED		3 AUG 67	
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ
	BU	REVISION STATUS CHANGED		29 AUG 67	B.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG
	BW	REVISION STATUS CHANGED		1 SEP 67	RLP
	BY	REVISION STATUS CHANGED		15 SEP 67	
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN SPLANE DATE 8 JUL 66
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APPROVAL
CONTRACT NAS9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 4 OF 8

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO.(REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP248	2007200-071	8102664	2007200-081	G&N 203,204, AND SPARE NO.1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP426		8102682		
.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY			1899950-051		1899950-251	G&N 17
.2					1899950-221		1899950-261	G&N 20
.3			0102653	ECP 426	1899950-231	8102682	1899950-271	G&N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP 427		8102680		
.1		NAVIGATON BASE & OPTICAL UNIT ASSEMBLY	0102654		1899950-171	8102680	1899950- 281	G&N 111
.2			0102654		1899950-211	8102680	1899950- 291	G&N 121
.3			0102662		1899950-191	8102691	1899950- 311	G&N 123
.4			0102662	ECP 427	1899950-211	8102708	1899950- 321	G&N 122
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASS'Y		0102646	ECP 290		8102671		
.1		NAV. BASE & OPTICAL UNIT ASS'Y					1899950-171	G&N 109,111,
.2							1899950-181	G&N 121
.3							1899950-191	G&N 123
.4							1899950-211	G&N 122, 100 SPARE
.5							1899950-221	G&N 20
.6							1899950-231	G&N 12
.7			0102646	ECP290		8102671	1899950-241	G&N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE.	OPTICS COVER ASSY	0102656	ECP423	1014532	8102683	1023080-011	12, 121, 122, 123, & 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G&N SYSTEM		ECP 359				
.1		NAV. BASE AND OPTICAL UNIT INST. KIT	0102643	ECP 359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
.2		NAV. BASE ASSEMBLY-LEM	0102643	ECP 359	6899950-031	8102685	6899950-021	G&N 601, 602
.3		NAV. BASE ASSEMBLY-LEM	0102643	ECP 359	6899980-031	8102684	6899980-021	G&N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G&N SYSTEM		ECP 373		8102667		
.1		NAV. BASE AND OPTICAL UNIT INST. KIT	0102642	ECP 373	2899950-031	8102667	2899950-021	G&N 202, 204, 205, 206,
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		* THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASS'Y 2010790.						
43.0	CORROSION PROTECTION			ECP 388				
.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G&N 203 & SPARE NO.1
.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G&N 203
.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603, 604 & SPARE NO.1
.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G&N 203
.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G&N 603,604 & SPARE NO.1
.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G&N 603,604 & SPARE NO.1
.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G&N 202, 203 & SPARE NO.1
.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G&N 603 & 604
.9		COUPLING DATA UNIT C/M	0102650	ECP 388	2007222-051	8102676	2007222-091	C/M SPARE NO.1
.10		POWER. SERVO & TC ASSEMBLY (C/M)	0102649	ECP388 & 529	2010743-021	8102675	2010743-041	G&N 202
.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP 388	2010744-011	8102676	2010744-031	G&N 202
.12		IMU AND ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP 388	2010747-011	8102674	2010747-041	G&N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G&N SYSTEM		ECP456				
.1		STOWAGE UNIT EYEPIECE	0102663	ECP 456	1021255-031	8102693	1021255-051	G&N 12
.2		STOWAGE UNIT EYEPIECE	0102663	ECP 456	1021255-041	8102693	1021255-061	G&N 121, 111, 124
.3		CASE EYEPIECE STOWAGE	0102663	ECP 456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP 438	1007700-021	8102687	1007700-041	G&N 12
.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP 438	1007700-031	8102687	1007700-051	G&N 121,122,123
.2	ADD 56MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP 438	1007670-021	8102687	1007670-041	G&N 12, 125, SPARE
.3	ADD 56MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP 438	1007670-031	8102687	1007670-051	G&N 121, 122, 123, SPARE
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP 462	6899950-011	8102701	6899950-031	G&N 601 AND 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP 462	6899980-011	8102701	6899980-031	G&N 603 THRU 605

REVISIONS

REV	ZONE	DESCRIPTION	CHG. NO.	DATE	APPROVED
AG		REVISED PER TDRR 30862		24 SEP 66	JJB RLW
AH		REVISED PER TDRR 31216		30 SEP 66	JB RLW
AJ		REVISION STATUS CHANGED		30 SEP 66	JJB RLW
AK		REVISED PER TDRR 31359		11 OCT 66	JJB
AL		REVISED PER TDRR 31550		20 OCT 66	T.D. RLW
AM		REVISED PER TDRR 31556		24 OCT 66	RLW
AN		REVISED PER TDRR 31706		7 NOV 66	LAL RLW
AP		REVISED PER TDRR 31793		9 NOV 66	JC SC
AR		REVISED PER TDRR 31797		10 NOV 66	JC SC
AS		REVISED PER TDRR 32009		29 NOV 66	WA RLW
AT		REVISED PER TDRR 32022		29 NOV 66	WA RLW
AU		REVISED PER TDRR 32030		29 NOV 66	WA RLW
AV		REVISION STATUS CHANGED		10 DEC 66	REF JAC
AW		REVISED PER TDRR 32203		14 DEC 66	RLW
AY		REVISION STATUS CHANGED		14 DEC 66	RLW
AZ		REVISION STATUS CHANGED		14 DEC 66	RLW
BA		REVISION STATUS CHANGED		12 JAN 67	DR MW
BB		REVISION STATUS CHANGED		12 JAN 67	DR MW
BC		REVISION STATUS CHANGED		13 JAN 67	DR
BD		REVISION STATUS CHANGED		22 FEB 67	JC RCB
BE		REVISED PER TDRR 33008		24 FEB 67	ME
BF		REVISION STATUS CHANGED		25 FEB 67	ME RCB
BG		REVISED PER TDRR 33279		4 APR 67	RM RCB
BH		REVISION STATUS CHANGED		12 APR 67	ES
BJ		REVISION STATUS CHANGED		12 APR 67	ES
BK		REVISION STATUS CHANGED		13 APR 67	ES
BL		REVISION STATUS CHANGED		13 APR 67	ES
BM		REVISED PER TDRR 33655		2 AUG 67	AN
BN		REVISION STATUS CHANGED		7 AUG 67	
BP		REVISION STATUS CHANGED		9 AUG 67	J.W.
BR		REVISION STATUS CHANGED		21 AUG 67	TJC
BS		REVISED PER TDRR 33987		23 AUG 67	TJC
BT		REVISION STATUS CHANGED		28 AUG 67	JJJ Y.M.
BU		REVISION STATUS CHANGED		29 AUG 67	JB Y.M.
BV		REVISION STATUS CHANGED		30 AUG 67	DG Y.M.
BW		REVISION STATUS CHANGED		1 SEP 67	RLP
BY		REVISION STATUS CHANGED		15 SEP 67	TJC
BZ		REVISION STATUS CHANGED		20 SEP 67	
CA		REVISION STATUS CHANGED		26 SEP 67	JRK RWH

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DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN OZZEL DATE 6 SEP 65
CHECKED C. WILSON
APPROVAL E. AUSTIN
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE
CODE IDENT NO. 99974
1021200
SCALE
SHEET 5 OF 8

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP 461				
47.1		GIMBAL SERVO AMPLIFIER ASSEMBLY	0102665	ECP 461	2007114-011	8102699	2007114-021	MODULE SPARES, G&N 203, 204,603,604,605 AND SPARES
47.2		POWER AND SERVO ASSEMBLY, C/M	0102666	ECP 461	2007200-051 2007200-061	8102696	2007200-081 2007200-071	G&N 203.204, AND SPARE NO.1
47.3		POWER AND SERVO ASSEMBLY, LEM	0102666	ECP 461	6007200-041	8102696	6007200-051	G&N 603, 604, 605, SPARE NO. 1 & SPARE NO. 2
47.4		POWER, SERVO & THERMOCOUPLE ASSEMBLY, C/M	0102666	ECP 461	2010743-021	8102707	2010743-031	G&N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSEMBLY, LEM	0102666	ECP 461	6010655-011	8102707	6010655-021	G&N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP 429	1015500-041 1015500-051	8102686	1015500-071 1015500-081	G&N 12 121, 122, 123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	426	-	8102692	1021373-021	12
49.2		APTPS	0102670	427	-	8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASS'Y	0102661	ECP446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU AND POWER SUPPLY ELECT. ASS'Y	0102661	ECP 446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP 446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY AND DIODE MODULE	CONTROL ELEC ASS'Y	0102660	ECP 446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY.	0102664	ECP 457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY.	0102664	ECP 457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE AND PREVENTION OF READ LOOP OSCILATION			ECP 499 AND ECP 515				
52.1		COUPLING DATA UNIT ASSEMBLY C/M & LEM	N/A	ECP 515	2010744-031	8102721	2010744-051	G&N 202
				ECP499 ECP 515	2007222-071	8102712 8102718	2007222-101	G&N 203 & 204
				ECP 499 ECP 515	2007222-091	8102712 8102718	2007222-161	G&N 205 & 2 SPARES
				ECP 515	2007222-111	8102723	2007222-161	G&N 206
				ECP499	2007222-081	8102712	2007222-121	G&N 604
				ECP499 ECP 515	2007222-081	8102712 8102719	2007222-131	G&N 603,605,606 & 2 SPARES
				ECP 515	2010744-021	8102722	2010744-041	G&N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP 515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT AND BELLOWS ASSEMBLY	0102673	ECP 0428	2010790-021	8102704	2010790-061	G&N 204 & 205
				ECP0428	2010790-031	8102704	2010790-071	G&N 206
			0102673	ECP0428	2010790-091	8102704	2010790-111	G&N 207 208 & 209
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCKII)	ASTROSEXTANTANT PASSIVE THERMAL PROTECTION SYSTEM ASSEMBLY	0102674	ECP0428	-	8102705	-	G&N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP0428	2015000	8102706	2015000	G&N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT AND BELLOWS ASSEMBLY	0102654	ECP0428	2010790-011	8102680	2010790-051	G&N 202

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISED PER TDRR 32086		10 DEC 66	KEF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	RLW
	AY	REVISED PER TDRR 32204		14 DEC 66	RLW
	AZ	REVISED PER TDRR 32241		14 DEC 66	RLW
	BA	REVISED PER TDRR 32393		12 JAN 67	DR RW
	BB	REVISED PER TDRR 32449		12 JAN 67	DR R.W.
	BC	REVISED PER TDRR 32514		13 JAN 67	DR R.W.
	BD	REVISED PER TDRR 32954		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISED PER TDRR 33018		25 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISED PER TDRR 33334		12 APR 67	ES
	BJ	REVISED PER TDRR 33430		12 APR 67	FS
	BK	REVISED PER TDRR 33431		13 APR 67	ES
	BL	REVISED PER TDRR 33432		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	
	BU	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISED PER TDRR 33985		21 AUG 67	TJC
	BS	REVISED PER TDRR 33987		23 AUG 67	TJC
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ
	BU	REVISION STATUS CHANGED		29 AUG 67	B.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG
	BW	REVISION STATUS CHANGED		1 SEP 67	
	BY	REVISION STATUS CHANGED		15 SEP 67	
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN ORZEL DATE 26 SEP 65
CHECKED C. WILSON
APPROVAL E. AUSTIN
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE
SHEET 6 OF 8

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	BM	THIS SHT ADDED PER TDRR 33655		2 AUG 67	AN
	BN	REVISED PER TDRR 33725		7 AUG 67	E
	BP	REVISED PER TDRR 33861		9 AUG 67	J.W
	BR	REVISED PER TDRR 33985		21 AUG 67	TJC
	BS	REVISION STATUS CHANGED		23 AUG 67	TJC
	BT	REVISED PER TDRR 34100		28 AUG 67	JJJ
	BU	*REVISED PER TDRR 34101*		29 AUG 67	B.
	BV	REVISED PER TDRR 34374		30 AUG 67	DS
	BW	REVISED PER TDRR 34419		1 SEP 67	RP
	BY	REVISION STATUS CHANGED		15 SEP 67	TJC
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	*REVISION STATUS CHANGED*		26 SEP 67	JRK RWH

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
54.1	*CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP*	IMU AND PEA		ECP 500	2007203-041	—	2007203-061	203
54.2					2007203-031	—	2007203-051	204 AND 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP 500	6007001-051	—	6007001-071	603, 605, AND 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP 500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP 500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP 500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP 500	2018601-051	8102715	2018601-071	603, 605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP 500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37, & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP 500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP 500	6007001-051	—	6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP 500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP 500	2018601-071	8102713	2018601-071	603, 605, 606, 2 SPARES ACSK NO 12, 21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP 500	1001500-091	8102709	1001500-111	G&N 123 AND SPARE S/N 7,9
	REPLACE UNRELIABLE CAPACITOR	PIP PREAMP	—	ECP 500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES AND SHORTENING OF HARNESS MOUNTING SCREWS			ECP 529				
56.1		POWER AND SERVO ASSEMBLY C/M	0102683	ECP 529	2007200-081	8102725	2007200-111	203 THRU 206 AND 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP 529	2014567-031	8102724	2014567-041	202 THRU 206 AND 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP (LEM)		ECP 533	6014515-021	8102726	6014515-031	LEM 607,
		G&N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10, 12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASS'Y		0102685	ECP 561				
		NAV. BASE AND OUA ASS'Y			1899950-321	8102728	1899950-331	G&N 122
		NAV. BASE AND OUA ASS'Y			1899950-311		1899950-341	G&N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP 538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 AND 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASS'Y			6014512-011		6014512-031	603 AND 605
		COMPUTER CONTROL & RETICLE DIMMER ASS'Y			6014512-021		6014512-041	606 AND 607
60.0	HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G AND N INDICATOR CONTROL PANEL ASSY		ECP 569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214 AND 2 SPARES
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP 301 AND 579	2010790-111	8102739	2010790-121	G&N 202
62.0	CUT PINS NO. 1 AND NO. 9	2 SPEED SWITCH ASS'Y TRAY 8	0102684	ECP 555	1007522-021	8102727	1007522-031	G&N 122 & 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSEMBLY	OPTICAL ELECTRONICS ASS'Y TRAY 8	0102684	ECP 555	1007578-021		1007578-031	G&N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASS'Y WITH MODIFICATION	OPTICAL ELECTRONICS ASS'Y TRAY 8	0102684	ECP 555	1007578-021		1007578-031	502 AND 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSEMBLY	PSA	0102684	ECP 555	1007570-021		1007570-041	501, G&N 123, 502, G&N 122

(BM) **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN NIKURS DATE 2 AUG 67 CHECKED APPROVAL CONTRACT	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL	NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	MIT APPROVAL	SCALE · SHEET 7 OF 8

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	BY	THIS SHT ADDED PER TDRR 34524		15 SEP 67	TJC
	BZ	REVISED PER TDRR 34558		20 SEP 67	
	CA	*REVISED PER TDRR 34565*		26 SEP 67	JRK RWH

ITEM NO.	DESCRIPTION	END ITEM	R.I.B NO. (REF)	AUTHORIZATION ECP NO. OR S.O.W.	P/N MOD (REF)	RFK NO.	NEW P/N (REF)	S/N
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP 603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP 603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q R MODULE ERROR AMP. CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 AND TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP 603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 & 8102748	2007238-051 2007238-061	SPARES & G & N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605, 606, 607, 608, 609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205, 206, 207, 208, 209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203, 204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP 603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM.FOIL TAPE	SIG. COND. ASS'Y C/M OPERATIONAL	N/A	ECP 623	2007234-011	8102731	2007234-021	G & N 205, 206, 207, 208, 209, 210 & 210S
65.1		HEADER ASS'Y SIG.COND. C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG.COND.ASS'Y C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASS'Y SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP 623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASS'Y LEM FLIGHT QUAL.	N/A	ECP 624	6007010-011	8102749	6007010-021	G & N 602 603, 605 & 606
66.1		HEADER ASS'Y SIG.COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG.COND.ASS'Y LEM OPERATIONAL	N/A		6007013-011		6007013-021	G & N 607, 608, 609, 610 & 608S
66.3		HEADER ASS'Y SIG. COND. OPERATIONAL	N/A	ECP 624	6007014-011	8102749	6007014-021	
67.0	*REMOVE ANTICREEP MODULE*			*ECP 590 F 612*				
67.1		*POWER, SERVO & THERMOCOUPLE ASSY C/M*	*NONE*	*ECP 612*	*2010743-041*	*8102740*	*2010743-051*	*G & N 202*
		POWER & SERVO ASSY C/M			*2007200-101*		*2007200-131*	
67.2		*POWER & SERVO ASSY C/M*	*NONE*	*ECP 590*	*2007200-111*	*8102740*	*2007200-121*	*G & N 204, 205, 3 SPARES, 206, & 207*

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
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MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN T. J. Cain DATE 15 SEPT 67
CHECKED 15 SEPT 67
APPROVAL
CONTRACT
NASA APPROVAL A.C. METZGER
CCB
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 8 OF 8

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BY	REVISION STATAUS CHANGED		15 SEP 67	9/C
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH
	CB	REVISION STATUS CHANGED		11 OCT 67	JJJ

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ Y.M.
	BU	REVISION STATUS CHANGED		29 AUG 67	B. Y.M.
	BV	REVISED PER TDRR 34374		30 AUG 67	DG Y.M.
	BW	REVISION STATUS CHANGED		1 SEP 67	RP

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BM	REVISION STATUS CHANGED		2 AUG 67	AN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISION STATUS CHANGED		21 AUG 67	9/C
	BS	REVISION STATUS CHANGED		23 AUG 67	9/C

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600		1007100	8102601	1007257-011	G&N 6
2.2		POWER & SERVO ASSY	0102600		1021207-011	8102600	1007257-031	G&N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G&N 17, 12
3.0	MOISTURE-PROOFING G&N 20	—	0102601	ECP-20	—	8102613	—	G&N 20
3.1		COUPLING DISPLAY UNIT			1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D&C GROUP			1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G&N 20
4.1		G&N HARNESS & END CONNECTOR			1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY			1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY			—		1899950-031	G&N 8
5.2					—		1899950-041	G&N 20
5.3					—		1899950-051	G&N 17, 12
6.0	CHANGE FROM 40 TO 100 SECOND TIME DELAY	D&C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G&N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASS'Y	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110, 111, 121 THRU 124 + SERIES 100 SP.
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G&N 17, 12, 50 SPARE
					1001500-021		1001500-051	G&N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARES
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D&C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G&N 17 QUAL. RETROFITS	G&N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASS'Y	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G&N SYS.		ECP-265		8102644		
13.1		G&N IND. CON. PANEL	0102625	ECP169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G&N IND. CON. PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110, 111, 121 THRU 124 "100" SPARES G&N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50" SP. 110, 111, 121 THRU 124 "100" SPARES G&N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50" SP. 110, 111, 121 THRU 124, 100 SPARES
13.5		D&C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G&N 12
					-051		-081	"50" SPARE
					-071		-101	G&N 110
					-061		-091	G&N 111, 121 THRU 124 & "100" SPARES
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G&N IND. CONT. PANEL	0102625	ECP-277	SEE ITEM 13.1			G&N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSEMBLY			1899950-041		1899950-121	G&N 20
15.2					1899950-051		1899950-091	G&N 12 & SPARE
15.3					1899950-071		1899950-111	G&N 111, 109, & SPARE
15.4					1899950-061		1899950-131	G&N 121
15.5				ECP-211	1899950-081		1899950-141	G&N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSEMBLY	0102629	ECP-243	1014664-011	8102647	1014664-021	110, 111, 121 THRU 124 AND SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	F	REVISION F REPLACES REVISION E WITH REDRAW PER TDRR 24706		14 DEC 65	
	G	REVISED PER TDRR 25186		14 JAN 66	RP EF
	H	REVISED PER TDRR 25358		26 JAN 66	LK
	J	REVISED PER TDRR 25469		2 FEB 66	DKD
	K	REVISED PER TDRR 26141		15 FEB 66	RP MEM
	L	REVISED PER TDRR 26434		22 FEB 66	DKD PJ
	M	REVISED PER TDRR 26436		24 FEB 66	DKD
	N	REVISED PER TDRR 26513		25 FEB 66	J.H.P.
	P	REVISED PER TDRR 26570		3 MAR 66	R.N.T.
	R	REVISION STATUS CHANGED	TDRR 26663	7-MAR-66	B.
	S	REVISION STATUS CHANGED	TDRR 26919	8 MAR 66	PHG
	T	REVISION STATUS CHANGED		1 APR 66	JJJ JAC
	U	REVISION STATUS CHANGED		4-APR-66	B.
	V	REVISION STATUS CHANGED		12 APR 66	RP RWH
	W	REVISION STATUS CHANGED		18 APR 66	JJJ
	Y	REVISION STATUS CHANGED		17 MAY 66	JJJ
	Z	REVISED PER TDRR 28808		19 MAY 66	JJJ JAC
	AA	REVISION STATUS CHANGED		1 JUN 66	JIMP
	AB	REVISION STATUS CHANGED		10 JUN 66	R.W.T.
	AC	REVISION STATUS CHANGED		15 JUN 66	LK
	AD	REVISION STATUS CHANGED		8 JUL 66	RWH
	AE	REVISION STATUS CHANGED		21 JULY 66	J.E.G. JRS
	AF	REVISION STATUS CHANGED		16-AUG 66	G. RW
	AG	REVISION STATUS CHANGED		24 SEP 66	JJB RLW
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		11 OCT 66	JJB RLW
	AL	REVISION STATUS CHANGED		20 OCT 66	T.D. RLW
	AM	REVISION STATUS CHANGED		24 OCT 66	RLW
	AN	REVISION STATUS CHANGED		7 NOV 66	LL RLW
	AP	REVISION STATUS CHANGED		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF TAC
	AW	REVISION STATUS CHANGED		14 DEC 66	EGB RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	EGB RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	EGB RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR
	BB	REVISION STATUS CHANGED		12 JAN 67	DR
	BC	REVISION STATUS CHANGED		12 JAN 67	DR
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	MB
	BF	REVISION STATUS CHANGED		25 FEB 67	MB ROB
	BG	REVISION STATUS CHANGED		4 APR 67	RN RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		13 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN Orgel DATE 6 Dec 65
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 1 CF 8

1021200

SEE BELOW

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BY	REVISION STATUS CHANGED		15 SEP 67	[illegible]
	BZ	REVISION STATUS CHANGED		20 SEP 67	[illegible]

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	BW	REVISION STATUS CHANGED		1 SEP 67	RP [illegible]

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM - BLOCK I SERIES 50.	G&N SYSTEM		ECP 169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP 169		8102623	1021255-011	G&N 12 "50" SPARE G&N 20
17.2		G&N INDICATOR CONTROL PANEL	0102622	ECP169,265,&277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
			0102622	ECP 169	1014578-041	8102641	1014578-041	G&N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM - BLOCK I SERIES 100	G&N SYSTEM		ECP 169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP 169		8102632	1021255-021	G&N 110, 111, 121, 122, 123, 124 "100" SPARES.
18.2		G&N INDICATOR CONTROL PANEL	0102622	ECP169 & 265	1014664-011	8102638	1014664-021	G&N 110, 111, 121, 122, 123, 124 "100" SPARES.
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP250,253,84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASS'Y	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASS'Y	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASS'Y	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASS'Y	0102626	ECP 225 & 270	1015086-000	8102646	1015086-011	~~110, 111, 109~~, 121, 122, 123, 124 SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTUREPROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP 266, 268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G&N 109, 110, 111
					1001500-061		1001500-091	121, 122, 123, 124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM.	OPTICAL UNIT	0102635	ECP 328	1011000-006	8102657	1011000-006	G&N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASS'Y	0102632	ECP 209	1014664-021	8102654	1014664-031	110, 111, 121, 122, 123, 124 AND SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP 267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12 AND SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP 267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU
26.0	MOISTURE PROOFING	PSA	0102628	ECP 206		8102650		
26.1					1007257-031		NO CHANGE	G&N 20
26.2					1007257-051			G&N 17
26.3					1007257-061			G&N 12
26.4					1007570-021			G&N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP 206		8102651		
27.1					1007257-031		NO CHANGE	G&N 20
27.2					1007257-051			G&N 17
27.3					1007257-061			G&N 12
27.4					1007570-021			G&N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP 206	1007585-011	8102651	NO CHANGE	G&N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP 225 & 270	1015086-000	8102655	1015086-021	G&N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP 225	1015086-000	8102656	1015086-031	G&N 109

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	CB	REVISION STATUS CHANGED		11 OCT 67	JJJ [illegible]

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	P	REVISED PER TDRR 26570 THIS SHEET ADDED.		3 MAR 66	R.W.T. [illegible]
	R	REVISED PER TDRR-26663		7 MAR 66	B. [illegible]
	S	REVISED PER TDRR 26819		8 MAR 66	PHG [illegible]
	T	REVISED PER TDRR 27452		1 APR 66	JJJ JAC
	U	REVISED PER TDRR 27457		4-APR-66	B. [illegible]
	V	REVISED PER TDRR 27825		12 APR 66	RP RWH
	W	REVISED PER TDRR 27840		18 APR 66	JJJ [illegible]
	Y	REVISED PER TDRR 28757		17 MAY 66	JJJ [illegible]
	Z	REVISED PER TDRR 28808		19 MAY 66	JJJ JAC
	AA	REVISED PER TDRR 29138		1 JUN 66	JIMP [illegible]
	AB	REVISION STATUS CHANGED		10 JUN 66	R.W.T. [illegible]
	AC	REVISION STATUS CHANGED		15 JUN 66	LK [illegible]
	AD	REVISION STATUS CHANGED		8 JUL 66	[illegible] RWH
	AE	REVISION STATUS CHANGED		21 JULY 66	J.E.G. JRS
	AF	REVISION STATUS CHANGED		16 AUG 66	G. [illegible]
	AG	REVISION STATUS CHANGED		24 SEP 66	JJP RLW
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		10 OCT 66	JJB DPW
	AL	REVISION STATUS CHANGED		20 OCT 66	T.D. RLW
	AM	REVISION STATUS CHANGED		24 OCT 66	RLW [illegible]
	AN	REVISION STATUS CHANGE		7 NOV 66	LL RLW
	AP	REVISION STATUS CHANGE		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	[illegible] RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	[illegible] RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	[illegible] RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR [illegible]
	BB	REVISION STATUS CHANGED		12 JAN 67	DR [illegible]
	BC	REVISION STATUS CHANGED		13 JAN 67	DR [illegible]
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME [illegible]
	BF	REVISION STATUS CHANGED		25 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES [illegible]
	BJ	REVISION STATUS CHANGED		12 APR 67	ES DW
	BK	REVISION STATUS CHANGED		13 APR 67	ES DW
	BL	REVISION STATUS CHANGED		13 APR 67	ES DW
	BM	REVISION STATUS CHANGED		2 AUG 67	AN DWN
	BN	REVISION STATUS CHANGED		7 AUG 67	[illegible]
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W. [illegible]
	BR	REVISION STATUS CHANGED		21 AUG 67	TJC [illegible]
	BS	REVISION STATUS CHANGED		23 AUG 67	TJC [illegible]
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ V.M.
	BU	REVISION STATUS CHANGED		29 AUG 67	B. V.M.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG [illegible]

1021200

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN Fill Turner DATE 3 MAR 66
CHECKED Wilson 3 MAR 66
APPROVAL [illegible] 3/7/66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE -
SHEET 2 OF 8

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
~~30.0~~	~~COATING OF EXPOSED BERYLLIUM PARTS~~		~~0102611~~	~~ECP 219~~		~~8102625~~		~~G&N 12, 20, 121, 122~~
~~30.1~~		~~NAVIGATION BASE ASSY~~			~~1899982-~~		~~NO CHANGE~~	
~~30.2~~		~~OPTICAL UNIT ASSY~~			~~1011000-~~			
					~~2011000-~~			
~~30.3~~		~~PSA, TOE CAP~~			~~1008535~~			
					1007220			
~~31.0~~	~~COATING OF EXPOSED BERYLLIUM PARTS~~	~~NAVIGATION BASE AND OPTICAL UNIT ASSY~~	~~0102611~~	~~ECP 219~~	~~1899950~~	~~8102625~~	~~NO CHANGE~~	~~BLK I (50 & 100) SPARES~~
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	–	–	ECP 306	–	–	–	–
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636		6007001-011	8102658	6007001-031	G&N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY			2018601-011		2018601-031	G&N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY.			6007001-021		6007001-041	G&N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY			2018601-041		2018601-051	G&N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP 219		8102625		
33.1		FRAME ASSY NAV BASE			1899982-000		1899982-011	G&N 12
33.2								50 SERIES SPARE
33.3								100 SERIES SPARE
33.4								G&N 121
33.5								G&N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G&N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G&N 121
33.9					2011000-021		2011000-022	G&N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G&N 12
33.12					1008535		1008535	G&N 121
33.13					1008535		1008535	G&N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G&N 12
33.15					-161		161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17					-131		-131	G&N 121
33.18					-141		-151	G&N 122
34.0	MOISTURE PROOFING	PSA, FRAMES #1-4	0102637	ECP269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES #5-10	0102637	ECP269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	Z	THIS SHEET ADDED PER TDRR 28808		19 MAY 66	JJJ JAC
	AA	REVISION STATUS CHANGED		1 JUN 66	JMP PJ
	AB	REVISED PER TDRR 29363		10 JUN 66	K.W.T.
	AC	REVISED PER TDRR 29507		15 JUN 66	LK
	AD	REVISED PER TDRR 29823		8 JUL 66	RWH
	AE	*REVISION STATUS CHANGED*		21 JULY 66	J.E.G. JKS
	AF	REVISION STATUS CHANGED		16 AUG 66	G RW
	AG	REVISION STATUS CHANGED		24 SEP 66	JJB RLW
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISED PER TDRR 31245		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		11 OCT 66	JJB RLW
	AL	REVISION STATUS CHANGED		20 OCT 66	TD RLW
	AM	*REVISION STATUS CHANGED*		24 OCT 66	PLW
	AN	REVISION STATUS CHANGED		7NOV66	LL RLW
	AP	REVISION STATUS CHANGED		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR RW
	BB	REVISION STATUS CHANGED		12 JAN 67	DR RW
	BC	REVISION STATUS CHANGED		13 JAN 67	DR RW
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISION STATUS CHANGED		25 FEB 67	ME
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		13 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	AN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISION STATUS CHANGED		21 AUG 67	TJC
	BS	REVISION STATUS CHANGED		23 AUG 67	TJC
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ Y.M.
	BU	*REVISION STATUS CHANGED*		29 AUG 67	Y.M.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG
	BW	REVISION STATUS CHANGED		1 SEP 67	RLP
	BY	REVISION STATUS CHANGED		15 SEP 67	TJC
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	*REVISION STATUS CHANGED*		26 SEP 67	JRK RWH
	CB	REVISION STATUS CHANGED		11 OCT 67	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN Janowiak DATE 19 MAY 66
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE –
SHEET 3 OF 8

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP 248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP 248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP 248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP 248	6007001-061	8102663	6007001-051	603, 604, 605, 606 AND SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP 248	6007000-051	8102663	6007000-041	603, 604, 605, 606 AND SPARE
35.5		POWER, SERVO AND TC ASSY, C/M	0102639	ECP 248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP 248	2007200-061	8102664	2007200-051	203, 204, AND SPARE
	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP 407				
		STOWAGE UNIT EYEPIECE			1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
		CASE - EYEPIECE STOWAGE			1021314-000	8102679	1021314-011	SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	AD	THIS SHEET ADDED PER TDRR 29823		8 JUL 66	$ RWH
	AE	REVISED PER TDRR 29822		21 JULY 66	J.E.G RS
	AF	REVISED PER TDRR 30542		16 AUG 66	G RW
	AG	REVISON STATUS CHANGED		24 SEP 66	JJB RLW
	AH	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AJ	REVISION STATUS CHANGED		30 SEP 66	JJB RLW
	AK	REVISION STATUS CHANGED		11 OCT 66	JJB JPW
	AL	REVISION STATUS CHANGED		20 OCT 66	TD RLW
	AM	REVISION STATUS CHANGED		24 OCT 66	RLW
	AN	REVISION STATUS CHANGED		7 NOV 66	RLW
	AP	REVISION STATUS CHANGED		9 NOV 66	JC SC
	AR	REVISION STATUS CHANGED		10 NOV 66	JC SC
	AS	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AT	REVISION STATUS CHANGED		29 NOV 66	WA RLW
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISION STATUS CHANGED		10 DEC 66	REF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	AY	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	AZ	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	BA	REVISION STATUS CHANGED		12 JAN 67	DR
	BB	REVISION STATUS CHANGED		12 JAN 67	DR
	BC	REVISION STATUS CHANGED		13 JAN 67	DR
	BD	REVISION STATUS CHANGED		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISION STATUS CHANGED		28 FEB 67	ME RCB
	BG	REVISION STATUS CHANGED		4 APR 67	RM RCB
	BH	REVISION STATUS CHANGED		12 APR 67	ES
	BJ	REVISION STATUS CHANGED		12 APR 67	ES
	BK	REVISION STATUS CHANGED		13 APR 67	ES
	BL	REVISION STATUS CHANGED		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	AN
	BN	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	JW
	BR	REVISION STATUS CHANGED		21 AUG 67	
	BS	REVISION STATUS CHANGED		23 AUG 67	
	BT	REVISION STATUS CHANGED		28 AUG 67	JJ
	BU	REVISION STATUS CHANGED		29 AUG 67	B.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG
	BW	REVISION STATUS CHANGED		1 SEP 67	
	BY	REVISION STATUS CHANGED		15 SEP 67	
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	JRK RWH
	CB	REVISION STATUS CHANGED		11 OCT 67	JJJ

1021200

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —

DO NOT SCALE THIS DRAWING

MATERIAL

APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN $PLANE DATE 8 JUL 66
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 4 OF 8

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO.(REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP248	2007200-071	8102664	2007200-081	G&N 203,204, AND SPARE NO.1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP426		8102682		
.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY			1899950-051		1899950-251	G&N 17
.2					1899950-221		1899950-261	G&N 20
.3			0102653	ECP 426	1899950-231	8102682	1899950-271	G&N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP 427		8102680		
.1		NAVIGATON BASE & OPTICAL UNIT ASSEMBLY	0102654		1899950-171	8102680	1899950-281	G&N 111
.2			0102654		1899950-211	8102680	1899950-291	G&N 121
.3			0102662		1899950-191	8102691	1899950-311	G&N 123
.4			0102662	ECP 427	1899950-211	8102708	1899950-321	G&N 122
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASS'Y		0102646	ECP 290		8102671		
.1		NAV. BASE & OPTICAL UNIT ASS'Y					1899950-171	G&N 109,111
.2							1899950-181	G&N 121
.3							1899950-191	G&N 123
.4							1899950-211	G&N 122, 100 SPARE
.5							1899950-221	G&N 20
.6							1899950-231	G&N 12
.7			0102646	ECP290		8102671	1899950-241	G&N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE.							
		OPTICS COVER ASSY	0102656	ECP423	1014532	8102683	1023080-011	12, 121, 122, 123, & 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G&N SYSTEM		ECP 359				
.1		NAV. BASE AND OPTICAL UNIT INST. KIT	0102643	ECP 359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
.2		NAV. BASE ASSEMBLY-LEM	0102643	ECP 359	6899950-031	8102685	6899950 021	G&N 601, 602
.3		NAV. BASE ASSEMBLY-LEM	0102643	ECP 359	6899980-031	8102684	6899980-021	G&N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G&N SYSTEM.		ECP 373		8102667		
.1		NAV. BASE AND OPTICAL UNIT INST. KIT	0102642	ECP 373	2899950-031	8102667	2899950-021	G&N 202, 204, 205, 206.
					*2011000-035		* 2010790-011	
					*2011000-034		* 2010790-021	
					*2011000-034		* 2010790-021	
					* 2011000-041		* 2010790-031	
42.2		* THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASS'Y 2010790.						
43.0	CORROSION PROTECTION			ECP 388				
.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G&N 203 & SPARE NO.1
.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G&N 203
.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603, 604 & SPARE NO.1
.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G&N 203
.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G&N 603,604 & SPARE NO.1
.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G&N 603, 604 & SPARE NO.1
.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G&N 202, 203 & SPARE NO.1
.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G&N 603 & 604
.9		COUPLING DATA UNIT C/M	0102650	ECP 388	2007222-051	8102676	2007222-091	C/M SPARE NO.1
.10		POWER. SERVO & TC ASSEMBLY (C/M)	0102649	ECP388 & 529	2010743-021	8102675	2010743-041	G&N 202
.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP 388	2010744-011	8102676	2010744-031	G&N 202
.12		IMU AND ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP 388	2010747-011	8102674	2010747-041	G&N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G&N SYSTEM		ECP456				
.1		STOWAGE UNIT EYEPIECE	0102663	ECP456	1021255-031	8102693	1021255-051	G&N 12
.2		STOWAGE UNIT EYEPIECE	0102663	ECP 456	1021255-041	8102693	1021255-061	G&N 121, 111, 124
.3		CASE EYEPIECE STOWAGE	0102663	ECP 456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP 438	1007700-021	8102687	1007700-041	G&N 12
.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP 438	1007700-031	8102687	1007700-051	G&N 121,122,123
.2	ADD 56MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP 438	1007670-021	8102687	1007670-041	G&N 2..25, SPARE
.3	ADD 56MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP 438	1007670-031	8102687	1007670-051	G&N 121, 122, 123. SPARE
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP 462	6899950-011	8102701	6899950-031	G&N 601 AND 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP 462	6899980-011	8102701	6899980-031	G&N 603 THRU 605

REVISIONS

REV	ZONE	DESCRIPTION	CHG. NO.	DATE	APPROVED
AG		REVISED PER TDRR 30862		24 SEP 66	JJB RLW
AH		REVISED PER TDRR 31216		30 SEP 66	JJB RLW
AJ		REVISION STATUS CHANGED		30 SEP 66	JJB RLW
AK		REVISED PER TDRR 31359		11 OCT 66	JJB
AL		REVISED PER TDRR 31550		20 OCT '66	T.D. RLW
AM		REVISED PER TDRR 31556		24 OCT 66	RLW
AN		REVISED PER TDRR 31706		7 NOV 66	LAL RLW
AP		REVISED PER TDRR 31793		9 NOV 66	JC SC
AR		REVISED PER TDRR 31797		10 NOV 66	JC SC
AS		REVISED PER TDRR 32009		29 NOV 66	WA RLW
AT		REVISED PER TDRR 32022		29 NOV 66	WA RLW
AU		REVISED PER TDRR 32030		29 NOV 66	WA RLW
AV		REVISION STATUS CHANGED		10 DEC 66	DEF JAC
AW		REVISED PER TDRR 32203		14 DEC 66	RLW
AY		REVISION STATUS CHANGED		14 DEC 66	RLW
AZ		REVISION STATUS CHANGED		4 DEC 66	RLW
BA		REVISION STATUS CHANGED		12 JAN 67	DR
BB		REVISION STATUS CHANGED		12 JAN 67	DR
BC		REVISION STATUS CHANGED		13 JAN 67	DR
BD		REVISION STATUS CHANGED		22 FEB 67	JC RCB
BE		REVISED PER TDRR 33008		24 FEB 67	ME
BF		REVISION STATUS CHANGED		25 FEB 67	ME RCB
BG		REVISED PER TDRR 33279		4 APR 67	RM RCB
BH		REVISION STATUS CHANGED		12 APR 67	ES
BJ		REVISION STATUS CHANGED		12 APR 67	ES
BK		REVISION STATUS CHANGED		13 APR 67	ES
BL		REVISION STATUS CHANGED		13 APR 67	ES
BM		REVISED PER TDRR 33655		2 AUG 67	AN
BN		REVISION STATUS CHANGED		7 AUG 67	
BP		REVISION STATUS CHANGED		9 AUG 67	J.W.
BR		REVISION STATUS CHANGED		21 AUG 67	TC
BS		REVISED PER TDRR 33987		23 AUG 67	TC
BT		REVISION STATUS CHANGED		28 AUG 67	JJJ
BU		REVISION STATUS CHANGED		29 AUG 67	Y.M.
BV		REVISION STATUS CHANGED		30 AUG 67	DG Y.M.
BW		REVISION STATUS CHANGED		1 SEP 67	RLP
BY		REVISION STATUS CHANGED		15 SEP 67	TC
BZ		REVISION STATUS CHANGED		20 SEP 67	
CA		REVISION STATUS CHANGED		26 SEP 67	JRK RWH
CB		REVISION STATUS CHANGED		11 OCT 67	JJJ

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — − ; 3 PLACE DECIMALS + — − ; ANGLES + — −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN OZZEL DATE 6 SEP 66 CHECKED C. WILSON APPROVAL E. AUSTIN CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	NASA APPROVAL A. C. METZGER	SIZE ; CODE IDENT NO. 99974 ; 1021200
APPROVAL	MIT APPROVAL W. KUPFER	SCALE ; SHEET 5 OF 8

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP 461				
47.1		GIMBAL SERVO AMPLIFIER ASSEMBLY	0102665	ECP 461	2007114-011	8102699	2007114-021	MODULE SPARES, G&N 203, 204, 603, 604, 605 AND SPARES
47.2		POWER AND SERVO ASSEMBLY, C/M	0102666	ECP 461	2007200-051 2007200-061	8102696	2007200-081 2007200-071	G&N 203, 204, AND SPARE NO. 1
47.3		POWER AND SERVO ASSEMBLY, LEM	0102666	ECP 461	6007200-041	8102696	6007200-051	G&N 603, 604, 605, SPARE NO. 1 & SPARE NO. 2
47.4		POWER, SERVO & THERMOCOUPLE ASSEMBLY, C/M	0102666	ECP 461	2010743-021	8102707	2010743-031	G&N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSEMBLY, LEM	0102666	ECP 461	6010655-011	8102707	6010655-021	G&N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP 429	1015500-041 1015500-051	8102686	1015500-071 1015500-081	G&N 12 121, 122, 123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	426	-	8102692	1021373-021	12
49.2		APTPS	0102670	427	-	8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASS'Y	0102661	ECP446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU AND POWER SUPPLY ELECT. ASS'Y	0102661	ECP446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY AND DIODE MODULE	CONTROL ELEC ASS'Y	0102660	ECP446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY.	0102664	ECP 457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY.	0102664	ECP 457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE AND PREVENTION OF READ LOOP OSCILATION			ECP 499 AND ECP 515				
52.1		COUPLING DATA UNIT ASSEMBLY C/M & LEM	N/A	ECP 515	2010744-031	8102721	2010744-051	G&N 202
				ECP499 ECP 515	2007222-071	8102712 8102718	2007222-101	G&N 203 & 204
				ECP499 ECP 515	2007222-091	8102712 8102718	2007222-161	G&N 205 & 2 SPARES
				ECP 515	2007222-111	8102723	2007222-161	G&N 206
				ECP499	2007222-081	8102712	2007222-121	G&N 604
				ECP499 ECP 515	2007222-081	8102712 8102719	2007222-131	G&N 603, 605, 606 & 2 SPARES
				ECP 515	2010744-021	8102722	2010744-041	G&N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP 515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT AND BELLOWS ASSEMBLY	0102673	ECP 0428	2010790-021	8102704	2010790-061	G&N 204 & 205
				ECP0428	2010790-031	8102704	2010790-071	G&N 206
			0102673	ECP0428	2010790-091	8102704	2010790-111	G&N 207 208 & 209
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANTANT PASSIVE THERMAL PROTECTION SYSTEM ASSEMBLY	0102674	ECP0428	-	8102705	-	G&N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP0428	2015000	8102706	2015000	G&N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT AND BELLOWS ASSEMBLY	0102654	ECP0428	2010790-011	8102680	2010790-051	G&N 202

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	AU	REVISED PER TDRR 32030		29 NOV 66	WA RLW
	AV	REVISED PER TDRR 32086		10 DEC 66	KEF JAC
	AW	REVISION STATUS CHANGED		14 DEC 66	EJB RLW
	AY	REVISED PER TDRR 32204		14 DEC 66	EJB RLW
	AZ	REVISED PER TDRR 32241		14 DEC 66	EJB RLW
	BA	REVISED PER TDRR 32393		12 JAN 67	DR J.W.
	BB	REVISED PER TDRR 32449		12 JAN 67	DR J.W.
	BC	REVISED PER TDRR 32514		13 JAN 67	DR J.W.
	BD	REVISED PER TDRR 32954		22 FEB 67	JC RCB
	BE	REVISION STATUS CHANGED		24 FEB 67	ME
	BF	REVISED PER TDRR 33018		25 FEB 67	ME ROB
	BG	REVISION STATUS CHANGED		4 APR 67	RM PCB
	BH	REVISED PER TDRR 33334		12 APR 67	ES
	BJ	REVISED PER TDRR 33430		12 APR	ES
	BK	REVISED PER TDRR 33431		13 APR 67	ES
	BL	REVISED PER TDRR 33432		13 APR 67	ES
	BM	REVISION STATUS CHANGED		2 AUG 67	
	BU	REVISION STATUS CHANGED		7 AUG 67	
	BP	REVISION STATUS CHANGED		9 AUG 67	J.W.
	BR	REVISED PER TDRR 33985		21 AUG 67	TJC
	BS	REVISED PER TDRR 33987		23 AUG 67	TJC
	BT	REVISION STATUS CHANGED		28 AUG 67	JJJ Y.M.
	BU	*REVISION STATUS CHANGED*		29 AUG 67	B. Y.M.
	BV	REVISION STATUS CHANGED		30 AUG 67	DG Y.M.
	BW	REVISION STATUS CHANGED		1 SEP 67	
	BY	REVISION STATUS CHANGED		15 SEP 67	
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	*REVISION STATUS CHANGED*		26 SEP 67	JRK RWH
	CB	REVISION STATUS CHANGED		11 OCT 67	JJJ

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON

2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES
+ —	+ —	+ —
—	—	—

DO NOT SCALE THIS DRAWING

MATERIAL

APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN ORZEL DATE 26 SEP 65
CHECKED C. WILSON
APPROVAL E. AUSTIN
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL N. KUPFER

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200

SCALE
SHEET 6 OF 8

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	BM	THIS SHT ADDED PER TDRR 33655		2 AUG 67	AN
	BN	REVISED PER TDRR 33725		4 AUG 67	E
	BP	REVISED PER TDRR 33861		9 AUG 67	J.W
	BR	REVISED PER TDRR 33985		21 AUG 67	TJC
	BS	REVISION STATUS CHANGED		23 AUG 67	TJC
	BT	REVISED PER TDRR 34100		28 AUG 67	JJJ V.M.
	BU	REVISED PER TDRR 34101		29 AUG 67	B. V.M.
	BV	REVISED PER TDRR 34374		30 AUG 67	DB V.M.
	BW	REVISED PER TDRR 34419		1 SEP 67	RP
	BY	REVISION STATUS CHANGED		15 SEP 67	TJC
	BZ	REVISION STATUS CHANGED		20 SEP 67	
	CA	REVISION STATUS CHANGED		26 SEP 67	URK RWH
	CB	REVISION STATUS CHANGED		11 OCT 67	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
54.1	*CONFORMAL COAT WIRE TERMINALS AND*	*IMU AND PEA*		ECP 500	2007203-041	—	2007203-061	203
54.2	*REPLACE PIP PREAMP*				2007203-031	—	2007203-051	204 AND 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP 500	6007001-051	—	6007001-071	603, 605, AND 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP 500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP500	2018601-051	8102715	2018601-071	603, 605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP 500	2007060-011	8102714	2021269-011	ALL MODULES S/N S LOWER THAN 37, & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP 500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE, TERMINALS AND	IMU & PTA		ECP 500	6007001-051	—	6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP 500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP 500	2018601-071	8102713	2018601-071	603, 605, 606, 2 SPARES ACSK NO. 12, 21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP 500	1001500-091	8102709	1001500-111	G&N 123 AND SPARE S/N 7, 9
	REPLACE UNRELIABLE CAPACITOR	PIP PREAMP	—	ECP 500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES AND SHORTENING OF HARNESS MOUNTING SCREWS			ECP 529				
56.1		POWER AND SERVO ASSEMBLY C/M	0102683	ECP 529	2007200-081	8102725	2007200-111	203 THRU 206 AND 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP 529	2014567-031	8102724	2014567-041	202 THRU 206 AND 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP (LEM)		ECP 533	6014515-021	8102726	6014515-031	LEM 607,
		G&N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10, 12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASS'Y		0102685	ECP 561				
		NAV. BASE AND OUA ASS'Y			1899950-321	8102728	1899950-331	G&N 122
		NAV. BASE AND OUA ASS'Y			1899950-311		1899950-341	G&N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP 538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 AND 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASS'Y			6014512-011		6014512-031	603 AND 605
		COMPUTER CONTROL & RETICLE DIMMER ASS'Y			6014512-021		6014512-041	606 AND 607
60.0	HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G AND N INDICATOR CONTROL PANEL ASSY		ECP 569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214 AND 2 SPARES
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP 501 AND 579	2010790-111	8102739	2010790-121	G&N 202
62.0	CUT PINS NO.1 AND NO.9	2 SPEED SWITCH ASS'Y TRAY 8	0102684	ECP 555	1007522-021	8102727	1007522-031	G&N 122 & 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSEMBLY	OPTICAL ELECTRONICS ASS'Y TRAY 8	0102684	ECP 555	1007578-021		1007578-031	G&N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASS'Y WITH MODIFICATION	OPTICAL ELECTRONICS ASS'Y TRAY 8	0102684	ECP 555	1007578-021		1007578-031	502 AND 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSEMBLY	PSA	0102684	ECP 555	1007570-021		1007570-041	501, G&N 123, 502, G&N 122

(BM) **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN NIKURS DATE 2 AUG 67 CHECKED APPROVAL CONTRACT	**MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)**
MATERIAL	NASA APPROVAL A.C. METZGER	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	MIT APPROVAL	SCALE · SHEET 7 OF 8

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	BY	THIS SHT ADDED PER TDRR 34524		15 SEP 67	JLC
	BZ	REVISED PER TDRR 34558		20 SEP 67	
	CA	REVISED PER TDRR 34565		26 SEP 67	JRK RWH
	CB	REVISED PER TDRR 34715		11 OCT 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B NO. (REF)	AUTHORIZATION ECP NO. OR S.O.W.	P/N MOD (REF)	RFK NO.	NEW P/N (REF)	S/N
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP 603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP 603	2007222 131	8102747	2007222 171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP. CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 AND TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP 603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 & 8102748	2007238-051 2007238-061	SPARES & G & N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605, 606, 607, 608, 609 & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205, 206, 207, 208, 209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203, 204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP 603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM. FOIL TAPE	SIG. COND. ASS'Y C/M OPERATIONAL	N/A	ECP 623	2007234-011	8102731	2007234-021	G & N 205, 206, 207, 208, 209, 210 & 210S
65.1		HEADER ASS'Y SIG. COND. C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASS'Y C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASS'Y SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP 623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASS'Y LEM FLIGHT QUAL.	N/A	ECP 624	6007010-011	8102749	6007010-021	G & N 602 603, 605 & 606
66.1		HEADER ASS'Y SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASS'Y LEM OPERATIONAL	N/A		6007013-011		6007013-021	G & N 607, 608, 609, 610 & 608S
66.3		HEADER ASS'Y SIG. COND. OPERATIONAL	N/A	ECP 624	6007014-011	8102749	6007014-021	
67.0	*REMOVE ANTICREEP MODULE*			*ECP 590 F 612*				
67.1		*POWER, SERVO & THERMOCOUPLE ASSY C/M*	*NONE*	*ECP 612*	*2010743-041*	*8102740*	*2010743-051*	*G & N 202*
		POWER & SERVO ASSY C/M			*2007200-101*		*2007200-131*	
67.2		*POWER & SERVO ASSY C/M*	*NONE*	*ECP 590*	*2007200-111*	*8102740*	*2007200-121*	*G & N 204, 205, 3 SPARES, 206, & 207*
68.0	*ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE*	*G & N INTERCONNECT HARNESS GROUP (LEM)*	*N/A*	*ECP 626*	*6014515-031*	*8102751*	*6014515-051*	*FOR REF*
		G & N HARNESS B (LEM)	*N/A*		*6010660*		*6010878*	*S/N 6 SPARES*

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± — DO NOT SCALE THIS DRAWING	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS DRAWN Cain DATE 15 SEPT 67 CHECKED 15 SEPT 67 APPROVAL CONTRACT	MANNED SPACECRAFT CENTER HOUSTON TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL APPROVAL	NASA APPROVAL A.C. METZGER CCB MIT APPROVAL E. AUSTIN	SIZE D CODE IDENT NO 99974 1021200 SCALE SHEET 8 OF 8

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 1 OF 11

REVISIONS						
ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD	
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM	

ITEM NO.	DESCRIPTION	END ITEM	R.I.E. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	W. KUPFER MIT APPROVAL	SCALE — SHEET 2 OF 11

1021200 CC

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OcT 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102630		6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY			2018601-011		2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY			6007001-021		6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102630	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE			1899982-000		1899982-011	G & N 12
33.2								50 SERIES SPARE
33.3								100 SERIES SPARE
33.4								G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					-161		-161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17					-131		-131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
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SHEET 3 OF 11

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + - 3 PLACE DECIMALS + - ANGLES + -	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN W. S. MUELLER DATE 27OCT67 CHECKED APPROVAL	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
DO NOT SCALE THIS DRAWING	CONTRACT NAS 9-497	
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
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REVISIONS					
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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2								
37.3					1899950-221		1899950-261	G & N 20
			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2								
38.3			0102654		1899950-211	8102680	1899950-291	G & N 121
38.4			0102662		1899950-191	8102691	1899950-311	G & N 123
			0102662	ECP-427	1899950-211	8102706	1899950-321	G & N 122

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607, 2 SPARES S/N 10,12
		G & N I/C HARNESS "A"			6010659		6010670	
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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MASTER RETROFIT KIT LIST
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REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854	CHG NO	27 OCT 67	WSM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,210S
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 608S
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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REVISIONS

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67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE

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1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES: —
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY						
15.2				↑	1899950-041		1899950-121	G & N 20
15.3					1899950-051		1899950-091	G & N 12 & SPARE
15.4					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.5				↓	1899950-061		1899950-131	G & N 121
				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-203	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 2 OF 11

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OcT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA						
26.1			0102628	ECP-206		8102650		
26.2					1007257-031		NO CHANGE	G & N 20
26.3					1007257-051			G & N 17
26.4					1007257-061			G & N 12
					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING							
27.1			0102628	ECP-206		8102651		
27.2					1007257-031		NO CHANGE	G & N 20
27.3					1007257-051			G & N 17
27.4					1007257-061			G & N 12
27.5	MOISTURE PROOFING				1007570-021			G & N 110 THRU 124
		TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636		6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY			2018601-011		2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY			6007001-021		6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES							
33.1			0102611	ECP-219		8102625		
33.2		FRAME ASSY NAV BASE			1899982-000		1899982-011	G & N 12
33.3								50 SERIES SPARE
33.4								100 SERIES SPARE
33.5								G & N 121
33.6					1899982-000		1899982-011	G & N 122
33.7		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.8					1011000-007		1011000-007	50 SERIES SPARE
33.9					2011000-001		2011000-001	G & N 121
33.10					2011000-021		2011000-022	G & N 122
33.11					2011000-021		2011000-022	100 SERIES SPARE
33.12		PSA TOE CAP			1008535		1008535	G & N 12
33.13		—			1008525		1008535	G & N 121
33.14					1008535		1008535	G & N 122, 123, 124
33.15		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.16					-161		-161	50 SERIES SPARE
33.17					-141		-151	100 SERIES SPARE
33.18					-131		-131	G & N 121
			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE —	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY						
39.2							1899950-171	G & N 109, 111
39.3							1899950-181	G & N 121
39.4							1899950-191	G & N 123
39.5							1899950-211	G & N 122 100 SPARE
39.6							1899950-221	G & N 20
39.7							1899950-231	G & N 12
			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102690	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500•081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2	—	COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
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DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 OCT 67
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 11

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP 500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 31 OCT 67
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A. C. METZGER
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MANNED
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 11

CD 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854	CHG NO	27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 NOV 67 APPROVAL	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING	CONTRACT NAS 9-497	
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 11

1021200

REVISIONS					
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,2105
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 608S
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED 8 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 10 OF 11

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34856		27 Oct 67	
	CD	REVISED PER TDRR 34863	—	7 NOV 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE

CC **THIS SHEET ADDED**

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DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 Oct 67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 11 OF 11

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

ND 1C00000	
NEXT ASSY	USED ON
APPLICATION	

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE.
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	———		ECP-306	—	—	—	———
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT.	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500•081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

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APPROVAL		SCALE NONE SHEET 9 OF 11

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,210S
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 608S
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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	CD	REVISED PER TDRR 34863	—	9 NOV 67	
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RWH

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67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECR 585,587&605	2018601-091	8102734 FOR A4 (A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 Oct 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-477
A.C. METZGER
NASA APPROVAL
E. AUSTIN
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 11

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ

NEXT ASSY	USED ON
ND 1000000	

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GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN W. S. MUELLER DATE 27 OCT 67
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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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SIZE D
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SHEET 2 OF 12

CF 1021200

REVISIONS					
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26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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SHEET 3 OF 12

1021200

REVISIONS

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
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					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,210S
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 608S
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 10 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34856		27 Oct 67	
	CD	REVISED PER TDRR 34863	—	9 NOV 67	J J
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	J J J

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607),12(LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP 585,587&605	2018601-091	8102734 FOR A4 (A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

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REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		15 NOV 67	J J J

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602

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SIZE D
CODE IDENT NO. 99974
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SHEET 12 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		20 Nov 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2				│	1399950-051		1899950-091	G & N 12 & SPARE
15.3				│	1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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1021200
SCALE —
SHEET 2 OF 12

CG 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED			

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
W.S. MUELLER 27 OCT 67
DRAWN DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
KIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 12

1021200

CG 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM PB

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M MURLEY
MIT APPROVAL

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SIZE D
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SCALE —
SHEET 4 OF 12

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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	CG	REVISION STATUS CHANGED	–	30 Nov 67	WSM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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+ ___ + ___ + ___
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AC ELECTRONICS DIVISION
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DRAWN W S MUELLER DATE 27 OcT 67
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SCALE NONE | SHEET 5 OF 12

1021200

ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.

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MASTER RETROFIT KIT LIST
APPOLLO G & N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200

SCALE NONE SHEET 6 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021,	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712, 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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MASTER RETROFIT KIT LIST
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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		[illegible] Nov 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
		REVISION STATUS CHANGED		30 Jan 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,210S
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 608S
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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SHEET 10 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	-	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34856	CHG. NO.	27 Oct 67	
	CD	REVISED PER TDRR 34863	—	7 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	
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	CG	REVISION STATUS CHANGED		30 Nov 67	

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67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR AA &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR AG	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),6(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMJ		ECR 585,587&605	2018601-091	8102734 FOR AA (AS POSITION. 8102762 FOR AG POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-081		2007203-071	203

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SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		20 NOV 67	

ITEM NO	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208

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SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.D NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	▲	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	▼	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		▲	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		▼	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		▲	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		▼	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		▲	—		1899950-031	G & N 8
5.2				▼	—		1899950-041	G & N 20
5.3				ECP-130	—		1699950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					▲ -051		▲ -081	"50" SPARE
					▼ -071		▼ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK

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ND 1000000
NEXT ASSY | USED ON
APPLICATION

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible]
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
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MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OcT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
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	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	JSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 12

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CH 1021200

REVISIONS

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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
35.7		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕		↕		
37.3			↕	↕	1899950-221	↕	1899950-261	G & N 20
			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2				↕				
38.3			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.4			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — − — 3 PLACE DECIMALS + — − — ANGLES + — − —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS. W. S. MUELLER 27 OCT 67 DRAWN DATE CHECKED 8 NOV 67 APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G&N (A C ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL APPROVAL	A.C. METZGER NASA APPROVAL W. KUPFER MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE NONE SHEET 5 OF 12

1021200

ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	9 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RU RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
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W. KUPFER
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MANNED
SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
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1021200
SCALE NONE
SHEET 6 OF 12

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 206
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 12

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ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 206 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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SCALE NONE SHEET 8 OF 12

CH 1021200

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60.0	HUMAN FACTORS & FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL ASSY		ECP-569	2014578-011	8102730	2021290-011	202
					2014578-021	8102730	2021290-011	203
					2014578-031	8102730	2021290-011	204 THRU 214, 2 SPARES

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SHEET 9 OF 12

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5					2010744-051	8102745	2010744-071	202
64.6				ECP-603 & 609	2010744-041	8102746	2010744-061	602
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210,2105
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, & 606
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609,610 & 6085
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34856	CHG. NO.	27 Oct 67	JSM
	CD	REVISED PER TDRR 34863	—	9 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	*REVISION STATUS CHANGED*		13 DEC 67	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010060		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP 585,587&605	2018601-091	8102734 FOR A4 & A5 POSITION.	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061	8102762 FOR A6 POS. 8102757	2007203-071	203

CC **THIS SHEET ADDED**

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 Oct 67
CHECKED E. Austin 30 Oct 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 12

1021200 CH

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WJM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN J JANOWIAK DATE 15 NOV 67 CHECKED APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
		MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
		APPROVAL		SCALE NONE SHEET 12 OF 12

CJ 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34856		27 Oct 67	JJS
	CD	REVISED PER TDRR 34863	—	9 NOV 67	JJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLF DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(6C9)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607),12(LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-585,587&605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 12

CK 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OcT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RwP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — − — 3 PLACE DECIMALS + — − — ANGLES + — − —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS W.S. MUELLER 27 OCT 67 DRAWN DATE CHECKED APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL — APPROVAL	A.C. METZGER NASA APPROVAL M. MURLER MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE — SHEET 3 OF 12

1021200

1021200 CK

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
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NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 12

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
—	CC	THIS SHEET ADDED PER TDRR 34854		27 Oct 67	JJ
	CD	REVISED PER TDRR 34863	—	9 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	M.B.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102752	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607),12(LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECR 585,587&605	2018601-091	8102734 FOR A4 (AS POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

CC **THIS SHEET ADDED**

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DRAWN W.S. MUELLER DATE 27 Oct 67
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MASTER RETROFIT KIT LIST
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1021200
SCALE NONE
SHEET 11 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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GENERAL MOTORS CORP MILWAUKEE WIS
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SHEET 2 OF 12

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	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
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	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007420-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JDM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
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	CM	REVISION STATUS CHANGED		11 JAN 68	

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102665	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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GENERAL MOTORS CORP MILWAUKEE WIS
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
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1021200
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SHEET 10 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 Oct 67	JSM
	CD	REVISED PER TDRR 34863	—	14 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	HTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP 585,587 & 605	2018601-091	8102734 FOR A4 (A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

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MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
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SHEET 11 OF 12

CM 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 3[illegible]4		30 NOV 67	WJM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207

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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
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SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO: OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,64R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	URK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	

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MASTER RETROFIT KIT LIST
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SCALE —
SHEET 1 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	REVISIONS				
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	WRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY						
15.2					1899950-041		1899950-121	G & N 20
15.3					1899950-051		1899950-091	G & N 12 & SPARE
15.4					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.5					1899950-061		1899950-131	G & N 121
				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102623	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

UNLESS OTHERWISE SPECIFIED
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —— SHEET 2 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWY
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	VRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018001-011	↑	2018001-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018001-041	8102658	2018001-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — − 3 PLACE DECIMALS + — − ANGLES + — −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	M. MURLER MIT APPROVAL	SCALE — · SHEET 3 OF 12

CN 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	J J
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	4.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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SHEET 4 OF 12

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
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	CN	REVISION STATUS CHANGED		19-JAN 68	

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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A.C. METZGER
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MASTER RETROFIT KIT LIST
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SHEET 7 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
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	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	[illegible]

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
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	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	N/A	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	N/A		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	N/A		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	N/A	ECP-624	6007014-011	8102749	6007014-021	

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REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 Oct 67	JSM
	CD	REVISED PER TDRR 34863	—	7 Nov 67	
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JSM
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	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011		2021269-031	
		PIP PREAMP			2021269-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP 585,587&605	2018601-091	8102734 FOR A4 (AS POSITION, 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

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SYM	ZONE	REVISIONS DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		5 NOV 67	J J
CG		REVISED PER TDRR 34914		30 NOV 67	DJM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	

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72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204 THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207

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	CP	REVISION STATUS CHANGED		29 JAN 68	JRK

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP 169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 2 OF 12

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP Rwy
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	URK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	URK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 116
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018001-011	↑	2018001-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018001-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + – 3 PLACE DECIMALS + – ANGLES + –	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO 99974 · 1021200
APPROVAL	M. MURLER MIT APPROVAL	SCALE — · SHEET 3 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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ANGLES ± —
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AC ELECTRONICS DIVISION
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MANNED
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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	CD	REVISION STATUS CHANGED	–	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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SIZE D
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SCALE NONE
SHEET 6 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899990-021	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER, SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102638	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

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REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	RWH
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		23 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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SHEET 8 OF 12

ZONE	TR	REVISIONS DESCRIPTION		DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854	CHG NO	27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	9 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR 35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.#.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APR
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		29 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102634	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007238-021	8102748	2007238-061	
64.3					2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.4					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.5					2007222-101	8102743	2007222-191	203,204
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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SHEET 10 OF 12

1021200 CP

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 Dec 67	
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR C.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	202
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102756	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207

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SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WJM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER, SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102796	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL·DIMMER ASSY			6014512-021		6014512-041	606 & 607

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 31 Oct 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	J J J
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	J J
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
				↕	2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
				↕	2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM		↕	2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3				↕	2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4				↕	2007222-101	8102743	2007222-191	203,204
64.5				↕				
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"		↕	2014803	↕	2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A	↕	2007235-011	↕	2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A	↕	2007271-011	↕	2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691	↕	6007013-011	↕	6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE · SHEET 10 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	—	0102601	ECP 20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
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2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
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	CE	REVISION STATUS CHANGED	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
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MASTER RETROFIT KIT LIST
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SIZE D
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1021200
SCALE —
SHEET 2 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
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	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL ___
M MURLEY
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SIZE D
CODE IDENT NO. 99974
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SHEET 4 OF 12

ZONE	LTR	REVISIONS DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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	CS	REVISION STATUS CHANGED		2 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
	—							
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
REVISIONS					
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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
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	CN	REVISION STATUS CHANGED		19-JAN 68	
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NA[illegible]

NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

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SCALE NONE | SHEET 6 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
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	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500•081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692	•	
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499	2007222-071	8102712	2007222-101	G & N 203 & 204
				ECP-515		8102718		
				ECP-499		8102712		G & N 205 & 2
				ECP-515	2007222-091	8102718	2007222-161	SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499	2007222-081	8102712	2007222-131	G & N 603,605,606
				ECP-515		8102719		& 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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SIZE D
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1021200
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SHEET 7 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.H.
	CP	REVISION STATUS CHANGED		[illegible] 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	9 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
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	CD	REVISED PER TDRR 34863	—	9 NOV 67	JJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
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67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FCR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031	8102738	6014512-051	SPARE, 605
					6014512-041	8102735	6014512-061	606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607),(LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-585,587&605	2018601-091	8102734 FOR A4 &A5 POSITION.	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061	8102762 FOR A6 POS. 8102757	2007203-071	203

CC THIS SHEET ADDED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 Oct 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 11 OF 12

CS 1021200

1021200

CS 1021200

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	PEPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C.METZGER
NASA APPROVAL E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
A.C. METZGER
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MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 1 OF 12

CT 1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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SIZE D
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SCALE —
SHEET 2 OF 12

1021200

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102625	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS + — −
3 PLACE DECIMALS + — −
ANGLES + — −

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN W.S. MUELLER DATE 27 OcT 67
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CONTRACT NAS 9-497

A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 3 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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GENERAL MOTORS CORP MILWAUKEE WIS
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M MURLEY
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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		[illegible] JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2					1899950-221		1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662		1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 12

CT 1021200

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR [illegible]454		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
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	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
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	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	3102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N [illegible]2,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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SCALE NONE
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REVISIONS					
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CK	REVISED PER TDRR 35098		28 DEC 67	
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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500•081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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GENERAL MOTORS CORP MILWAUKEE WIS
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 7 OF 12

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM PB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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GENERAL MOTORS CORP MILWAUKEE WIS
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REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	~~MASTER~~ MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 9 OF 12

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REVISIONS					
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
				↕	2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM		↕	2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3				↕	2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4				↕	2007222-101	8102743	2007222-191	203,204
64.5				↕				
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"		↕	2014803	↕	2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A	↕	2007235-011	↕	2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A	↕	2007271-011	↕	2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691	↕	6007013-011	↕	6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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	CC	THIS SHEET ADDED PER TDRR 34854	CHG NO	27 OCT 67	
	CD	REVISED PER TDRR 34863	—	7 NOV 67	JJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	RWH
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67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603), (605), (606), (LEM SPARE), (609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-031	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECR 585,587&605	2018601-091	8102734 FOR A4 (AS POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-081		2007203-071	203

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GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 Oct 67
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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 11 OF 12

1021200

CT 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	J J J
CG		REVISED PER TDRR 34914		30 NOV 67	DJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	WTY
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE

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SHEET 12 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	MB
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	——	ECP-25	——	8102602	——	——
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600		1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	——	0102601	ECP-20	——	8102613	——	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP			[illegible]	[illegible]	[illegible]	[illegible]
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP 63	——	8102611	——	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY			1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	——	8102622	——	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	——		1899950-031	G & N 8
5.2					——		1899950-041	G & N 20
5.3				ECP-130	——		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	——	8102648	——	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					-071		-101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP 169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-001	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12, SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

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DRAWN W. S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	4.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007435-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27OCT67
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NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

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SIZE	CODE IDENT NO.	
D	99974	1021200
SCALE		SHEET 4 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
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	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	HN
	CN	REVISION STATUS CHANGED		17-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT.		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE			1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2					1899950-221		1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662		1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
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	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
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	CM	REVISION STATUS CHANGED		11 JAN 68	[illegible]
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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42,2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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	CK	REVISED PER TDRR 35098		28 DEC 67	
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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-061	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	MH
	CP	REVISION STATUS CHANGED		[illegible] 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607, 2 SPARES S/N 10,12
		G & N I/C HARNESS "A"			6010659		6010670	
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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CODE IDENT NO. 99974
1021200
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SHEET 8 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854	CHG NO	27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR 35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM.	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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SHEET 9 OF 12

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		29 JAN 68	JPR
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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SHEET 10 OF 12

ZONE	LTR	REVISIONS DESCRIPTION	CHG. NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 Oct 67	JJM
	CD	REVISED PER TDRR 34863	—	7 NOV 67	JJJ
	CE	REVISED PER TDRR 34905	—	10 Nov 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JJM
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP 627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N9) ,205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2) 205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY		ECP-594	6014512-031 6014512-041	8102738 8102735	6014512-051 6014512-061	SPARE, 605 606 THRU 609 AND SPARE
71.0	REPLACE CAPACITOR.	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE),19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205),17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204),(208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585,605 AND 587	2018601-071	8102734	2018601-111	11(607), 12 (LEM SPARE
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	AS POSITION	2018601-121	8 (BLK II SPARE)
		IMU & PEA			2007203-051	8102762	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	(FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		MIDDLE AXIS ASSY			2018603-031	POSITION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE),7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQ'D	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP585,587&605	2018601-091	8102734 FOR A4 (AS POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA		ECP-585,587 & 605	2007203-061		2007203-071	203

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 Oct 67 CHECKED 3 Nov 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)	
MATERIAL APPROVAL	A.C METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 SCALE NONE	1021200 SHEET 11 OF 12

1021200 CU

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

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DO NOT SCALE THIS DRAWING
MATERIAL ______
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15NOV67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600		1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP 20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP			1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY			1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2					—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102646	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					-071		-101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL R. MILLARD

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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MASTER RETROFIT KIT LIST
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1021200
SCALE —
SHEET 2 OF 12

CV 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	DSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	DSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102653	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018001-011	↑	2018001-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018001-041	8102658	2018001-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102025		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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1021200
SCALE —
SHEET 3 OF 12

1021200

1021200 4

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
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SHEET 4 OF 12

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K

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REVISIONS					
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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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REVISIONS					
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		1 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM PB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M
	CP	REVISION STATUS CHANGED		2[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	JR

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4 54.5 54.6	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
		IMU		ECP-500	2018601-021	8102716	2018601-091	203
		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10 54.11	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	810271[illegible]	2018601-071	603,605,606,2 SPARES ASSY NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607, 2 SPARES S/N 10,12
		G & N I/C HARNESS "A"			6010659		6010670	
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± | 3 PLACE DECIMALS ± | ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
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SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 8 OF 12

CV 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC THIS SHEET ADDED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A C METZGER NASA APPROVAL	SIZE D CODE IDENT NO 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 2

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
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	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LR

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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SIZE D
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SHEET 10 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505	CHG NO	9 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT- ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

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SHEET 11 OF 12

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CV		REVISION STATUS CHANGED		8 FEB 68	LR

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 588	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	

CF THIS SHEET ADDED

NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP 130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102021	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 240.	D & C ELECTRONICS ASSY	0102612	ECP-240	1015065-031 1015065-041	8102620 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102016	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	PP

NEXT ASSY	USED ON
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APPLICATION

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3 PLACE DECIMALS ± —
ANGLES ± —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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A.C. METZGER
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R. MILLARD
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 1 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	2P

ITEM NO.	DESCRIPTION	END ITEM	R.I.E. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY			1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1839950-061		1899950-131	G & N 121
15.5				ECP 211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
A.C. METZGER
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W KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 2 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899952-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102011	ECP 219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	9 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

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(AC ELECTRONICS)

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SCALE —
SHEET 3 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007516-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP

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CONTRACT NAS 9-497
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ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	REVISIONS				
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	BP RWM
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		8-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		17-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556 021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1807581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 5 OF 12

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP 388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

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	CE	REVISION STATUS CHANGED	–	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
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	CF	REVISED PER TDRR 34906	-	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL- ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 12

1021200 CW

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203 041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102715	2018601-071	603,605,606,2 SPARES ASSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OLA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	MH
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 8 OF 12

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	17 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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CODE IDENT NO 99974
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SHEET 9 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	–	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051 2007238-061	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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NASA APPROVAL A.C. METZGER
MIT APPROVAL E AUSTIN

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HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
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SHEET 10 OF 12

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		7 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT-ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSI-TION. 8102762 FOR A6 POS. 8102757	2007203-071	203

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MASTER RETROFIT KIT LIST
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SHEET 11 OF 12

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REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	DJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND THERMOCOUPLE ASSY		ECP-605	2018699-011	8102733	2018699-031	202
					2018699-021	8102733	2018699-041	602
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	

CF THIS SHEET ADDED

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN J. JANOWIAK DATE 15 NOV 67
		MATERIAL	CHECKED
		APPROVAL	APPROVAL
			CONTRACT NAS 9-497
			A.C. METZGER NASA APPROVAL
			E. AUSTIN MIT APPROVAL

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SPACECRAFT CENTER
HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 12 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102606	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102645	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903 051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257 051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502 021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MJ
	CM	REVISION STATUS CHANGED		11 JAN 68	A. H.
	CN	REVISION STATUS CHANGED		19-JAN 68	MB
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — − | 3 PLACE DECIMALS + — − | ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL ——
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL R. MILLARD

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.E. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102623	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		1 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		23 FEB 68	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE —
SHEET 2 OF 12

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	-	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		8 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102653	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018001-011	↑	2018001-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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GENERAL MOTORS CORP MILWAUKEE WIS
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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	DSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

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1021200 CY

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	BP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LF

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-001	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950 271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	–	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP 438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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	CK	REVISED PER TDRR 35098		28 DEC 67	
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	CY	REVISION STATUS CHANGED		20FEB 68	LK

ITEM NC.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL- ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	MH
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ASSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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DIMENSIONS ARE IN INCHES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 2 [illegible] 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 12

1021200 CY

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
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	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

ITEM NU.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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DRAWN W. S. MUELLER DATE 27 OCT 67
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A. C. METZGER
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E. AUSTIN
MIT APPROVAL

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

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1021200
SCALE NONE
SHEET 9 OF 12

1021200

REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED		7 NOV 67	
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	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT- ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSI- TION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
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SHEET 11 OF 12

CY 1021200

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CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
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CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J. JANOWIAK DATE 15 NOV 67
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CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL E. AUSTIN
MIT APPROVAL

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	REVISIONS				
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	—	ECP-25	—	8102602	—	——
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	—	8102622	—	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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AC ELECTRONICS DIVISION
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DRAWN W.S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

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SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
APOLLO G&N
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SCALE — | SHEET 1 OF 13

1021200

1021200 CZ

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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GENERAL MOTORS CORP MILWAUKEE WIS
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MANNED
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MASTER RETROFIT KIT LIST
APPOLLO G & N
(AC ELECTRONICS)

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1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP 306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24-JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

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3 PLACE DECIMALS + — −
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CONTRACT NAS 9-497

A.C. METZGER
NASA APPROVAL

M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 13

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION ~~STATUS~~ CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED ___
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CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL M MURLEY

MANNED
SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
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SHEET 4 OF 13

CZ 1021200

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	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		17-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	DP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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SIZE D
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SCALE NONE
SHEET 5 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	–	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM.	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670 041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670 051	G&N 121,122,123 SPARE

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	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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TOLERANCES ON
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MATERIAL —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ RWM
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	AN
	CN	REVISION STATUS CHANGED		19 JAN 68	MJ
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION ~~STATUS~~ CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102715	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607, 2 SPARES S/N 10,12
		G & N I/C HARNESS "A"			6010659		6010670	
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 19

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 9 OF 13

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSO
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
	CP	REVISED PER TDRR 35266		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
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SIZE D
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1021200
SCALE NONE
SHEET 10 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 6	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN W S MUELLER DATE 27 OCT 67 CHECKED MALIKOWSKI 3 NOV 67 APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G&N A C ELECTRONICS
DO NOT SCALE THIS DRAWING		
MATERIAL —	A C METZGER NASA APPROVAL E AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO 99974 1021200
APPROVAL		SCALE NONE SHEET 11 OF 13

CZ 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	J J J
CG		REVISED PER TDRR 34914		30 NOV 67	WJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	WTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	[illegible]
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		9 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP(BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

CF THIS SHEET ADDED

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 12 OF 13

CZ 1021200

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TORR 35582		28FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)

CZ THIS SHEET ADDED

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 13 OF 13

1021200 CZ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR . O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	35, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		20 JAN 68	JRK
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
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APPROVAL
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE — | SHEET 1 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					[illegible]		[illegible]	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		[illegible]	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		01026–7	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] 67	
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	CF	REVISED PER TDRR 34906	–	15 NOV 67	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

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GENERAL MOTORS CORP MILWAUKEE WIS
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CHECKED
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CONTRACT [illegible]-427
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2839950-011	6102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESL	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34654		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible] NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		[illegible] JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		[illegible] 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS [illegible]
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP RWH
	CF	REVISED PER TDRR 34903	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		24 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		10 MAY 68	LK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE	CODE IDENT NO.	
D	99974	1021200
SCALE NONE		SHEET 7 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616, ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		4 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 11 OF 4

1021200 | 2

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 205, 206, 207, 208, 209, 202 & 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-061	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJ
CG		REVISED PER TDRR 34914		30 NOV 67	DJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	[illegible]
CL		REVISED PER TDRR 35117		2 JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	[illegible]
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		9 FEB 68	[illegible]
CW		REVISED PER TDRR 35579		14 FEB 68	ZP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH

CF THIS SHEET ADDED

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 2 OF 1[illegible]

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		[illegible] FEB 68	
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		[illegible] FEB 68	
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DE	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DF	REVISION STATUS CHANGED		[illegible] MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		8 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		20 MAY 68	LK

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED [illegible] 3NOV67
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL R. MILLARD

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 1 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY						
15.2				↑	1899950-041		1899950-121	G & N 20
15.3					1899950-051		1899950-091	G & N 12 & SPARE
15.4					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.5				↓	1899950-061		1899950-131	G & N 121
				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,12[illegible] "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,12[illegible] "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZU RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15 JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		[illegible] 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		28 MAY 68	LK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ———
SHEET 2 OF 14

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499	2007222-071	8102712	2007222-101	G & N 203 & 204
				ECP-515		8102718		
				ECP-499		8102712		G & N 205 & 2
				ECP-515	2007222-091	8102718	2007222-161	SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499	2007222-081	8102712	2007222-131	G & N 603,605,606
				ECP-515		8102719		& 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C McTZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 14

DK 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANCE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	81Q2768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

ND1000000		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED MALIKOWSKI 3 NOV 67 APPROVAL	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
APPLICATION		MATERIAL	CONTRACT NAS 9-497	SIZE D · CODE IDENT NO. 99974 · 1021200
		APPROVAL	AC. METZGER NASA APPROVAL R. MILLARD MIT APPROVAL	SCALE — · SHEET 13 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.D. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	RR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		[illegible] FEB 68	LR
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		5 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		29 MAY 68	LR
	DL	REVISION STATUS CHANGED		4 JUN 68	J.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN H. E. MUELLER DATE 27 OCT 67
CHECKED [illegible] 31 OCT 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

70 0021201

ITEM NO.	DESCRIPTION	END ITEM	R.I.D. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102759	2010790-181	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-081	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021334-011	G&N 205, 206, 207, 208, 209, 202 & 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102765	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102766	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-181	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 588	2010766-061	8102765	2010766-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010766-051	8102765	2010766-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 622	6016512-051	8102760	6016512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-081	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJ
CG		REVISED PER TDRR 34914		20 NOV 67	JJM
CH		REVISED PER TDRR 34946		23 NOV 67	JRK
CJ		REVISED PER TDRR 35054		30 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	AN.
CN		REVISION STATUS CHANGED		[illegible] JAN 68	
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		30 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB	JRK
CV		REVISION STATUS CHANGED		[illegible]	LK
CW		REVISED PER TDRR 35579		14 FEB	ZP
CY		REVISED PER TDRR 35580		[illegible]	LK
CZ		REVISION STATUS CHANGED		20 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		15 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		24 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK
DK		REVISION STATUS CHANGED		29 MAY 68	LK
DL		REVISION STATUS CHANGED		6 JUN 68	B.

CF THIS SHEET ADDED

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APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200.
SCALE NONE
SHEET 12 OF 14

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		[illegible] FEB 68	JRK
DA		REVISED PER TDRR 35698		5 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		24 APR 68	JJJ
DH		REVISION STATUS CHANGED		5 MAY 68	JJ
DJ		REVISION STATUS CHANGED		[illegible] 68	LK
DK		REVISION STATUS CHANGED		[illegible] 68	RWH
DL		REVISION STATUS CHANGED		4-JUN-68	J

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECR NO. OR S.O.W.	P/N MOD. (REF)	RFX NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102794	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84.3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021351		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205) (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-051	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—	653	2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] KOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R. MILLARD
KIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE —
SHEET 13 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ

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SCALE — | SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
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					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
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					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPL[illegible]CS REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. E. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M MURLEY
MIT APPROVAL

MANNED
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE	CODE IDENT NO.	
D	99974	1021200
SCALE NONE		SHEET 7 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. CR S.C.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4 54.5 54.6	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
		IMU		ECP-500	2018601-021	8102716	2018601-091	203
		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10 54.11	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
		IMU		ECP-500	2018601-051	8102716	2018601-C71	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ASSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

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	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		20 MAY 68	LK
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3-26-67
APPROVAL
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 8 OF 12

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G&N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G&N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N18)	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-021 2021309	8102737	2021290-031 2021419

REVISIONS

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	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM

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SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM

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CONTRACT NAS 9-497
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		[illegible] FEB 68	
	CY	REVISION STATUS CHANGED		23 FEB	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 [illegible] 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		23 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2), 205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THPU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

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CONTRACT NAS9-497
NASA APPROVAL A C McTZGER
MIT APPROVAL E AUSTIN

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HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 11 OF 14

VC 0021201 , 2

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CE		THIS SHEET ADDED PER TDRR34906		3 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	DSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	AN.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		21 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ VM

ITEM NO	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-061	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 428	6014518-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 12 OF 14

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		*THIS SHEET ADDED PER TDRR 35582*		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		*REVISION STATUS CHANGED*		29 APR 68	JJJ RSP
DH		*REVISION STATUS CHANGED*		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	JB
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ VM

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 603 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible]KOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 13 OF 14

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34E 4		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		[illegible] JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		[illegible] APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		[illegible] MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	
	DM	REVISION STATUS CHANGED		[illegible] JUN 68	JJJ
	DN	REVISION STATUS CHANGED		[illegible] JUN 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY			1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102623	ECP 243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
13.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		26 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015096-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	M. MURLER MIT APPROVAL	SCALE — · SHEET 3 OF 14

DN 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	D.M.
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	DM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18-JUN 68	JJJ

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1021200

NC 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6599980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-081	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CR	REVISION STATUS CHANGED		30 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LP
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		24 APR 68	JJJ RCP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		10 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT. APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N18)	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021418

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISED PER TDRR 35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		[illegible] 68	
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A. C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051, -071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061, -081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		27 OC	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
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	CF	REVISED PER TDRR 34906	—	13 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.P. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F 612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		[illegible] FEB 68	
	CY	REVISION STATUS CHANGED		2? FEB 6?	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		[illegible] 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		[illegible] 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C McTZGER
MIT APPROVAL E AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 4.

NC 0021201

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		[illegible] JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		[illegible] FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		2 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4 JUN 68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 588	2010744-061	8102766	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 428	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED ___
APPROVAL ___
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO 99974 | 1021200
SCALE NONE | SHEET 12 OF 12

DN 1021200

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	
DH		REVISION STATUS CHANGED		6 MAY 68	
DJ		REVISION STATUS CHANGED		20 MAY 68	RWH
DK		REVISION STATUS CHANGED		68	
DL		REVISION STATUS CHANGED		4 JUN 68	
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ TW
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU			2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011	8102785	2021323-021	204
					2021334		2901628	
					2021335		2901629	
					2021290-021	8102786	2021290-041	1 SPARE, 206, 208 THRU 215
					2021425		2901628	
					2021426		2901629	

DE THIS SHEET ADDED

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NEXT ASSY	USED ON
APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

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SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE — | SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	DSP
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		6 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		9 JUL 68	RWH

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 14

DP 1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JJJ
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BP RWM
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		[illegible] JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	[illegible]
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		8 MAY 68	JJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	J
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203,204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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GENERAL MOTORS CORP MILWAUKEE WIS
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CONTRACT [illegible]-427
A.C METZGER
NASA APPROVAL
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 5 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST, KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST, KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER, SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RL RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible] 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		25 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		20 MAY 68	LK
	DL	REVISION STATUS CHANGED		[illegible] JUN 68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		[illegible]	RWH

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1021200

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible]	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		9 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		8 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] 68	ZP
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		[illegible] APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] MAY 68	LK
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	[illegible]
	DP	REVISED PER TDRR 36540		[illegible] 68	[illegible]

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL- ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

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CONTRACT NAS 9-497
A.C. METZGER
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E. AUSTIN
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CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 14

1021200

1021200 DP

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		8 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	AN.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		[illegible] JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		[illegible] 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	ZP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		29 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		24 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LR KWH
DK		REVISION STATUS CHANGED		28 MAY 68	LR
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		9 JUL 68	KWH

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (PER)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-031	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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A.C METZGER
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO 99974 | 1021200
SCALE NONE | SHEET 12 OF 14

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPR
REVISIONS					
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4 JUN 68	JB
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		16 JUN 68	JJJ
DP		REVISION STATUS CHANGED		6 JUL 68	SA RWH

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85 0	MCDIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS A	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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A.C. METZGER
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MANNED SPACECRAFT CENTER
HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 13 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	—	ECP-25	—	8102602	—	——
2.1		POWER & SERVO ASSY	0102600	▲	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	▼	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP 20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		▲	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		▼	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		▲	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		▼	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	—	8102622	—	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		▲	—		1899950-031	G & N 8
5.2				▼	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					▲ -051		▲ -081	"50" SPARE
					▼ -071		▼ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	

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SHEET 1 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	RE''ISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		22 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible]-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 [illegible] 68	JJJ
	DE	REVISION STATUS CHANGED		15 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		[illegible] APR 68	JJJ
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	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 [illegible] 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102632	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		7 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		[illegible] 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — − 3 PLACE DECIMALS + — − ANGLES + — −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	M. MURLER MIT APPROVAL	SCALE — SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		9 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22-JUL	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 14

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CV	REVISION STATUS CHANGED		FEB 68	LK
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	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		16 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ + +
− − −
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 Oct 67
CHECKED 3 Nov 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
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1021200
SCALE NONE
SHEET 5 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
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	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
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	DP	REVISION STATUS CHANGED		18 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22-JUL	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 6 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL- ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34654		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		24 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		16 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	

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MASTER RETROFIT KIT LIST
APOLLO G & N
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSN
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	RR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		29 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		MAR 68	JJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36840		15 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	

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DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 8 of 14

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		[illegible]	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LR RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LR
	DL	REVISED PER TDRR 36240		4-JUN-68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-081 2014656-081 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N18)	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

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GENERAL MOTORS CORP MILWAUKEE WIS.
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		15-JAN 68	
	CP	REVISED PER TDRR 35266		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	[illegible]	REVISION STATUS CHANGED		2 FEB 68	
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		[illegible] 68	
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		[illegible] MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible]	LK RWH
	DK	REVISION STATUS CHANGED		[illegible] 68	LK
	DL	REVISION STATUS CHANGED		[illegible] 68	
	DM	REVISION STATUS CHANGED		[illegible] JUN	JJJ
	DN	REVISION STATUS CHANGED		10 JUN 68	JJ
	DP	REVISION STATUS CHANGED		[illegible]	RWH
	DR	REVISION STATUS CHANGED		[illegible]	

1021200

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METEGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 10 of 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-031	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102754	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		FEB 68	LK
	CW	REVISION STATUS CHANGED		4 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] 68	RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	MJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
AC ELECTRONICS

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 11 OF 4.

1021200

DR 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			C'02688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 588	2010744-061	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 428	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		15 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		[illegible] 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4 JUN 68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISED PER TDRR 36540		9 JUL 68	TA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	

CF THIS SHEET ADDED

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 12 OF 14

DR 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CH. NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		5 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	J.J.J.
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		[illegible] MAY 68	LK RWH
DK		REVISION STATUS CHANGED		[illegible] MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	JB.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		[illegible] 68	JJJ
DP		REVISION STATUS CHANGED		16 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102887	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ THIS SHEET ADDED

NEXT ASSY	USED ON
MD100000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 13 OF 14

1021200

DR 1021200

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		[illegible] 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ TW
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-[illegible] 68	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU	—		2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011	8102785	2021323-021	204
					2021334		2901628	
					2021335		2901629	
					2021290-021	8102786	2021290-041	1 SPARE, 206, 208 THRU 215
					2021425		2901628	
					2021426		2901629	
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE

DE THIS SHEET ADDED

NEXT ASSY	USED ON
ND1000009	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — −
3 PLACE DECIMALS + — −
ANGLES + — −
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MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DR WN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	—	ECP-25	—	8102602	—	——
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	—	8102622	—	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP 130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	——	8102648	——	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

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TOLERANCES ON
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3 PLACE DECIMALS ± —
ANGLES ± —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1699950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267.	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CK	REVISION STATUS CHANGED		28 DEC 67	
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	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S.MUELLER DATE 27 OCT 67
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE — | SHEET 2 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↕	6007001-011	8102653	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↕	↕	2018601-011	↕	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↕	↕	6007001-021	↕	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↕	↕	1899982-000	↕	1899982-011	G & N 12
33.2			↕	↕	↕	↕	↕	50 SERIES SPARE
33.3			↕	↕	↕	↕	↕	100 SERIES SPARE
33.4			↕	↕	↕	↕	↕	G & N 121
33.5			↕	↕	1899982-000	↕	1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY	↕	↕	1011000-005	↕	1011000-005	G & N 12
33.7			↕	↕	1011000-007	↕	1011000-007	50 SERIES SPARE
33.8			↕	↕	2011000-001	↕	2011000-001	G & N 121
33.9			↕	↕	2011000-021	↕	2011000-022	G & N 122
33.10			↕	↕	2011000-021	↕	2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP	↕	↕	1008535	↕	1008535	G & N 12
33.12			↕	↕	1008535	↕	1008535	G & N 121
33.13			↕	↕	1008535	↕	1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY	↕	↕	1899950-091	↕	1899950-091	G & N 12
33.15			↕	↕	-161	↕	-161	50 SERIES SPARE
33.16			↕	↕	-141	↕	-151	100 SERIES SPARE
33.17			↕	↕	-131	↕	-131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
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M. MURLER
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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	4.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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SHEET 4 OF 13

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSom
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	-	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	-	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	DP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102669	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S MUELLER DATE 27 OCT 67
CHECKED [illegible]
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	9 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM PB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED Faust 3-26-67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 13

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	9 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible] 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN N. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A. C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 13

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
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	CL	REVISION STATUS CHANGED		2-JAN 68	
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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS + — −
3 PLACE DECIMALS + — −
ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
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MANNED
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MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 13

DA 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	N/A	ECP-626	6014515-031	8102751	6014515-051	FOR REF
		G&N HARNESS B (LEM)	N/A		6010660		6010878	S/N 6 SPARES
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION) 8102757	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031		2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 11 OF 13

1021200

1021200 DA

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		10 NOV 67	DJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTV
CL		REVISED PER TDRR 35117		2-JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	[illegible]
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		[illegible] 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	DP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102758	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 13

DA 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TORR 35582		28FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011 2021381-011 2021361 2021352-011 2021353-011 2021354	8102775	2021382-021 2021443-011 2021439 2021352-021 2021353-021 2021438	G&N 202

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED ...LKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
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HOUSTON TEXAS

MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 13 OF 13

1021200 DA

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	——	ECP-25	——	8102602	——	——
2.1		POWER & SERVO ASSY	0102600	▲	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	▼	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP-20	——	8102613	——	G & N 20
3.1		COUPLING DISPLAY UNIT		▲	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		▼	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP 63	——	8102611	——	G & N 20
4.1		G&N HARNESS & END CONNECTOR		▲	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		▼	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	——	8102622	——	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		▲	——		1899950-031	G & N 8
5.2				▼	——		1899950-041	G & N 20
5.3				ECP-130	——		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	——	8102648	——	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					▲ -051		▲ -081	"50" SPARE
					▼ -071		▼ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK

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APPLICATION

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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WY
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 2 OF 13

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		8 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	——		ECP-306	——	——	——	——
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636		6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY			2018601-011		2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY			6007001-021		6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE			1899982-000		1899982-011	G & N 12
33.2								50 SERIES SPARE
33.3								100 SERIES SPARE
33.4								G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					-161		-161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17					-131		-131	G & N 121
33.18			0102611	ECP 219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
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MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 3 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DB	REVISION STATUS CHANGED		6 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27OCT67
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NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 13

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		8 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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DIMENSIONS ARE IN INCHES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NA33-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6399950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500•081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-. ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
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MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
CODE IDENT NO. 99974
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SCALE NONE
SHEET 7 OF 13

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
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	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.G. MUELLER DATE 27 OCT 67
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)

SIZE D
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1021200
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SHEET 8 OF 13

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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SHEET 9 OF 13

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	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15 JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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ITEM NU.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
				↕	2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM		↕	2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3				↕	2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4				↕	2007222-101	8102743	2007222-191	203,204
64.5				↕				
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"		↕	2014803	↕	2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A	↕	2007235-011	↕	2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A	↕	2007271-011	↕	2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691	↕	6007013-011	↕	6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 10 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT- ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSI- TION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 67	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK

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SYM	ZONE	REVISIONS DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	DJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	H.A.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	[illegible]
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		9 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204 THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	PEPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 588	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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SHEET 12 OF 13

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REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	

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1021200

DC 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	—	ECP-25	—	8102602	—	——
2.1		POWER & SERVO ASSY	0102600	▲	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	▼	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	——	0102601	ECP 20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		▲	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		▼	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		▲	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		▼	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	—	8102622	—	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		▲	—		1899950-031	G & N 8
5.2				▼	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903 051	
12.2		POWER & SERVO ASSY	0102616	ECP 251,84R	1007257-041	8102631	1007257 051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					▲ -051		▲ -081	"50" SPARE
					▼ -071		▼ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 13

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
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	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
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	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		23 FEB 68	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP 169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)

SIZE D CODE IDENT NO 99974 1021200
SCALE —
SHEET 2 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102630		6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY			2018001-011		2018001-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY			6007001-021		6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102630	ECP-306	2018001-041	8102658	2018001-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE			1899982-000		1899982-011	G & N 12
33.2								50 SERIES SPARE
33.3								100 SERIES SPARE
33.4								G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOL CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					-161		-161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17					-131		-131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S MUELLER DATE 27 OCT 67
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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 3 OF 13

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
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					1007484-011		1007484-021	
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					1007486-011		1007486-031	
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					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
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					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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SCALE
SHEET 4 OF 13

REVISIONS

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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021.	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 5 OF 13

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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MASTER RETROFIT KIT LIST
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1021200
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SHEET 6 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102669	ECP-462	6899950-011	8102701	6899950-021	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
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	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWM
	CF	REVISED PER TDRR 34906	-	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

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MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 7 OF 13

DC 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ASSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	[illegible] 67	[illegible]
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RCP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 13

1021200

DC 1021200

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

1021200

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A C METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE · SHEET 9 OF 13

ITEM NC.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
				↕	2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM		↕	2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3				↕	2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4				↕	2007222-101	8102743	2007222-191	203,204
64.5				↕				
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"		↕	2014803	↕	2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A	↕	2007235-011	↕	2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A	↕	2007271-011	↕	2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691	↕	6007013-011	↕	6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	[illegible]
	CP	REVISED PER TDRR 35266		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 10 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626	6014515-031	8102751	6014515-051	602
		~~G&N HARNESS B (LEM)~~			~~6010660~~		~~6010678~~	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		2? FEB	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ

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TOLERANCES ON
2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —

DO NOT SCALE THIS DRAWING

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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN W S MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A C METZGER
NASA APPROVAL
E AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 11 OF 13

DC 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	DSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	[illegible]
CL		REVISED PER TDRR 35117		2-JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	[illegible]
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	EP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204 THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	*SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*206*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 12 OF 13

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603, 605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS A	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	

CZ THIS SHEET ADDED

ND1000000		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + – 3 PLACE DECIMALS + – ANGLES + –	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON TEXAS	
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67	MASTER RETROFIT KIT LIST APOLLO G&N (A C ELECTRONICS)	
APPLICATION		MATERIAL	CHECKED WALIKOWSKI 3 NOV 67	SIZE D	CODE IDENT NO 99974 1021200
		APPROVAL	APPROVAL	SCALE –	SHEET 13 OF 13
			CONTRACT NAS 9-497		
			A.C. METZGER		
			NASA APPROVAL R. MILLARD		
			MIT APPROVAL		

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N C
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

NO 1000000	
NEXT ASSY	USED ON
APPLICATION	

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TOLERANCES ON
2 PLACE DECIMALS + — − —
3 PLACE DECIMALS + — − —
ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 3

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-061		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		30 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
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A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 13

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 Oct 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED			
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 13

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
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CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE	CODE IDENT NO.	
D	99974	1021200

SCALE
SHEET 4 OF 13

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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
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	CM	REVISION STATUS CHANGED		11 JAN 68	4N
	CN	REVISION STATUS CHANGED		17-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OcT 67
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MASTER RETROFIT KIT LIST
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SIZE D
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1021200
SCALE NONE
SHEET 5 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-C31	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-C31	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	W. KUPFER MIT APPROVAL	SCALE NONE · SHEET 6 OF 13

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	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± | 3 PLACE DECIMALS ± | ANGLES ±
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 7 OF 13

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		18 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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ANGLES ± —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 2 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 13

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 9 OF 13

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051 2007238-061	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED 31 OCT 67 APPROVAL CONTRACT NAS 9-437	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 10 OF 13

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 &	6014512-011	8102764	6014512-071	602
			N/A	ECP-594	6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT- ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSI- TION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 67	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ

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DIMENSIONS ARE IN INCHES
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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C McTZGER
MIT APPROVAL E AUSTIN

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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO 99974
1021200
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SHEET 11 OF 13

DD 1021200

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	JSM
CH		REVISED PER TDRR 34946		[illegible] NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	[illegible]
CL		REVISED PER TDRR 35117		2 JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	[illegible]
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION ~~STATUS~~ STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 12 OF 13

DD 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
AC. METZGER
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MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 13 OF 13

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 240	D & C ELECTRONICS ASSY	0102612	ECP-240	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ

NO 1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 1 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CE	REVISION STATUS CHANGED	—	10 Nov 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

30 1021200

REVISIONS					
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	CK	REVISION STATUS CHANGED		28 DEC 67	
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	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102025		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP 219	1899950-141	8102025	1899950-151	G & N 122

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W.S. MUELLER 27 OCT 67
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MASTER RETROFIT KIT LIST
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SIZE D
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1021200
SCALE —
SHEET 3 OF 14

1021200

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
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	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
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					1007522-011		1007522-021	
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					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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CONTRACT NAS 9-497
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SIZE D
CODE IDENT NO. 99974
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SHEET 5 OF 14

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REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	–	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RU RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	[illegible]
	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	[illegible]
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,1:1,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILLATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041 2007203-031		2007203-061 2007203-051	203 204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601 081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-081 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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MATERIAL
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031,	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C McTZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
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A C ELECTRONICS

SIZE D
CODE IDENT NO 99974
1021200
SCALE NONE
SHEET 11 OF 14

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR34906		15 NOV 67	J.J.J.
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		13 NOV	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LR
CW		REVISED PER TDRR 35579		14 FEB 68	ZP
CY		REVISED PER TDRR 35580		20 FEB 68	LR
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	J.J.J.
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	J.J.J.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	HEPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	PEPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 428*	*6014512-051*	*8102760*	*6014512-061*	*SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*206*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.C	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 12 OF 14

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018802-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018803-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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SHEET 13 OF 14

DE 1021200

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SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TORR 35752		13 MAR 68	JJJ

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88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU			2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

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SHEET 14 OF 14

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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WDM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102623	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578 041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
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	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		1 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

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MIT APPROVAL M MURLEY

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MASTER RETROFIT KIT LIST
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SHEET 4 OF 14

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		5 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	│	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
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CONTRACT [illegible]
A.C. METZGER
NASA APPROVAL
W. KUPFER
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SHEET 5 OF 14

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		1 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILLATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102721	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 1-

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607,
		G & N I/C HARNESS "A"			6010659		6010670	2 SPARES S/N 10,12
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	13 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	MH
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		25 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	ZR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	BLK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		15 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-081 2014656-081 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± · 3 PLACE DECIMALS ± · ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP · MILWAUKEE WIS. DRAWN W. S. MUELLER · DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL APPROVAL	A. C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200 SCALE NONE · SHEET 9 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 6	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		~~6010677~~	~~602~~
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSIT-ION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	
	DD	REVISION STATUS CHANGED		12 MAR 68	
	DE	REVISION STATUS CHANGED		14 MAR 68	
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK

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SIZE D
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SHEET 11 OF 4

1021200

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	JGM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	[illegible]
CL		REVISED PER TDRR 35117		2 JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	[illegible]
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		9 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		[illegible] 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 428	6014512-051	8102760	6014512-061	SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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MASTER RETROFIT KIT LIST
APOLLO G&N
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SIZE D CODE IDENT NO. 99974 1021200
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REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		5 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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DRAWN W. S. MUELLER DATE 27 OCT 67
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1021200
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SHEET 13 OF 14

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REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECR NO. OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU			2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			8007001-111	8102773	8007001-121	

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SHEET 4 OF 4

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	C102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014515-011	8102604	1014515-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP 130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JDM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MA
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MB
	CP	REVISION STATUS CHANGED		20 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	KR
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

ND 1000000
NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS | 3 PLACE DECIMALS | ANGLES
± | ± | ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE — | SHEET 1 OF 14

1021200

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11-JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		23 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.N.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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TOLERANCES ON
2 PLACE DECIMALS + — − | 3 PLACE DECIMALS + — − | ANGLES + — −
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 14

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
~~27.4~~					~~1007570-021~~			~~G & N 110 THRU 124~~
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.1		INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY	0102636	↑	6007001-011	8102658	6007001-031	G & N 601, 602
32.2		INERTIAL MEASURING UNIT ASSY	↑		2018601-011	↑	2018601-031	G & N 601, 602
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	↓	↓	6007001-021	↓	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP BWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		1 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		26 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 4 OF 14

1021200

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
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	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	CL
	CK	RIVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	JK
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	PEVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	6102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
	ADDITION OF SILICONE ~~RUBBER~~ STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
35.7		POWER & SERVO ASSEMBLY C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G & N 203,204 & SPARE NO. 1
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LP
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER, SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12,125 SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-. ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	ZR
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
57.0	REROUTE UPLINK SIGNALS	G&N INTERCONNECT HARNESS GROUP(LEM)		ECP-533	6014515-021	8102726	6014515-031	LEM 607, 2 SPARES S/N 10,12
		G & N I/C HARNESS "A"			6010659		6010670	
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	SEE ITEM 60	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICAL DIMMER ASSY			6014512-021		6014512-041	606 & 607

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3-2-67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PEP TDRR 34854		27 OCT 67	[illegible]
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible] 67	[illegible]
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	D & C GROUP	202		ECP-569 & 612	2014623-011 2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569 & 597	2014623-031 2014578-081 2014656-081 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2014623-051 2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	D & C GROUP	205 THRU 209 & (1) SPARE		ECP 569	2014623-031 2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2014623-041 2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A. C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 14

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051,-071 2007238-061,-081	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

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MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A C METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597 & ECP-627	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 & ECP-627	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSIT-ION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ

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DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 14

DG 1021200

ITEM NO	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-041	8102759	2014623-071	G&N 205, 206, 207, 208, 209
75.2		DISPLAY & CONTROL GROUP	0102694	ECP 629	2014623-051	8102759	2014623-061	G&N 202, 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102756	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 34914		10 NOV 67	WJM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	[illegible]
CL		REVISED PER TDRR 35117		2 JAN 68	[illegible]
CM		REVISED PER TDRR 35128		11 JAN 68	AN.
CN		REVISION STATUS CHANGED		[illegible] 68	[illegible]
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		[illegible] 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		[illegible] 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	ZP
CY		REVISED PER TDRR 35580		[illegible]	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		24 APR 68	JJJ

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GENERAL MOTORS CORP MILWAUKEE WIS
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SIZE D
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1021200
SCALE NONE
SHEET 12 OF 14

1021200 DG

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		FEB 68	JRK
DA		REVISED PER TDRR 35698		5 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
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A.C. METZGER
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MIT APPROVAL

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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 13 OF 14

1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO (REF)	AUTHORIZATION ECP NO OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU			2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY	—		2007209-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

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1021200
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SHEET 4 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP 251	1016903-021	8102645	1016903 051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
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	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ

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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY			1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		[illegible] JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible]-JAN 68	
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	PP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 14

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	6	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000 021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 3 OF 14

1021200

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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
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					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
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					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007545-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		JAN 68	4 N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJ

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SHEET 4 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-131	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RJ RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
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	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102676	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER, SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

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	CK	REVISED PER TDRR 35098		28 DEC 67	
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	CM	REVISION STATUS CHANGED		JAN 68	AN
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041 2007203-031		2007203-061 2007203-051	203 204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

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	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209 & (1) SPARE		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A C METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 14

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24.	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC THIS SHEET ADDED

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±

DO NOT SCALE THIS DRAWING

MATERIAL

APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 12

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616, ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9),205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A6 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS +— −— 3 PLACE DECIMALS +— −— ANGLES +— −—
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
W S MUELLER 27 OCT 67
DRAWN DATE
MA..OWSKI 3 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A C METZGER
NASA APPROVAL
E AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 4

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	JJM
CH		REVISED PER TDRR 34946		19 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	WTY
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		2? APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP NO OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G & N 204 & 205
					2010790-071		2010790-161	G & N 206
					2010790-091		2010790-141	G & N 207
					2010790-111		2010790-131	G & N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G & N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G & N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G & N 205, 206, 207, 208, 209, 202 & 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G & N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G & N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G & N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G & N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G & N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G & N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	206
		G & N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — − —   3 PLACE DECIMALS + — − —   ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN J JANOWIAK DATE 15NOV67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C METZGER
NASA APPROVAL
E. AUSTIN
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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

DH 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		5 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ RA
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102897	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

MD1000000		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED MALIKOWSKI 3 NOV 67 APPROVAL CONTRACT NAS 9-497
APPLICATION		MATERIAL APPROVAL	AC. METZGER NASA APPROVAL R. MILLARD MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200

SCALE — | SHEET 13 OF 14

1021200

DH 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU			2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102765	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

DE THIS SHEET ADDED

ND1000000		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — ; 3 PLACE DECIMALS + — ; ANGLES + —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED MAL KOWSKI 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
APPLICATION		MATERIAL APPROVAL	AC METZGER NASA APPROVAL R MILLARD MIT APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200 SCALE — · SHEET 4 OF 4

1021200

DJ 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY			1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		[illegible] JAN 68	
	CM	REVISION STATUS CHANGED		[illegible] JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

1021200

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE —
SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 [illegible] 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36/53		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE	CODE IDENT NO.	
D	99974	1021200

SCALE ——— SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 69	LK RWH

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M MURLEY
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021200
SCALE
SHEET 4 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP 500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

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AC ELECTRONICS DIVISION
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DRAWN W. S. MUELLER DATE 27 OCT 67
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 12

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
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	CY	REVISION STATUS CHANGED		20 FEB 68	LK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ ESP
	DH	REVISED PER TDRR 36/53		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209 & (1) SPARE		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
KIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051, -071	SPARES & G&N MODULES
				↕	2007238-021	8102748	2007238-061, -081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM		↕	2007222-131	8102744	2007222-221	605, 606, 607, 608, 609, & 3 SPARES
64.3				↕	2007222-161	8102743	2007222-181	205, 206, 207, 208, 209 & 3 SPARES
64.4				↕	2007222-101	8102743	2007222-191	203, 204
64.5				↕				
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205, 206, 207, 208, 209, 210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"		↕	2014803	↕	2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A	↕	2007235-011	↕	2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A	↕	2007271-011	↕	2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602, 603, 605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691	↕	6007013-011	↕	6007013-021	G&N 607, 608, 609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34864		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		[illegible] MAR 68	
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH

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GENERAL MOTORS CORP. MILWAUKEE WIS.
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 1-

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		68	JRK
DA		REVISED PER TDRR 35698		MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJ
DJ		REVISION STATUS CHANGED		68	RWH

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 202
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 208 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (603),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

NEXT ASSY	USED ON
N01000000	

APPLICATION

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DIMENSIONS ARE IN INCHES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED KOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL R. MILLARD
KIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 19 OF 14

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	KK RWH

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU	—		2018601-201	8102773	2018601 -231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007209-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

DE THIS SHEET ADDED

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV67
APPROVAL
CONTRACT NAS 9-497
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NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 4 OF 4

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible]	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		8 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		28 MAY 68	LK

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

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MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1C07402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		[illegible] DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	[illegible]
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		6 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		18 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		20 MAY 68	LK

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GENERAL MOTORS CORP. MILWAUKEE WIS.
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CHECKED [illegible] 3 Nov 67
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CONTRACT NAS 9-497
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SHEET 4 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2 JAN 68	HJ
	CM	REVISION STATUS CHANGED		11 JAN 68	FN
	CN	REVISION STATUS CHANGED		17 JAN 68	HJ
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203,204 & SPARE NO. I
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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SHEET 5 OF 14

1021200

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ \+ \+
- \- \-
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-417
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.B.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35902		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 31 OCT 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JJJ
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RLP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		15 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR36239		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209 & (1) SPARE		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N18)	0102699	569 R1	2021290-011	8102778	2021290-021

CC THIS SHEET ADDED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL APPROVAL	A. C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE NONE SHEET 9 OF 14

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APP'D
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		15-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED	—	13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051, -071 2007238-061, -081	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605, 606, 607, 608, 609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205, 206, 207, 208, 209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203, 204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205, 206, 207, 208, 209, 210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602, 603, 605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607, 608, 609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DR/WN W.S. MUELLER DATE 27 Oct 67
CHECKED 8 Nov 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		[illegible] JAN 68	
CP		REVISION STATUS CHANGED		26 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		15 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		24 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-151	G&N 204 & 205
					2010790-071		2010790-161	G&N 206
					2010790-091		2010790-141	G&N 207
					2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 205, 206, 207, 208, 209, 202 & 204
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-061	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

CF **THIS SHEET ADDED**

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1021200
SCALE NONE
SHEET 12 OF 14

DK 1021200

REVISIONS

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DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
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DK		REVISION STATUS CHANGED		28 MAY 68	LK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU	—		2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

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1021200
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SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		[illegible]-JAN 68	WB
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 [illegible] 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		3 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
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	DL	REVISION STATUS CHANGED		4-JUN-68	

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SHEET 1 OF 14

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500 051	SPARES FOR SERIES 100 OPTICS CDU

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	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		23 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFX NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34864		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible] 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		[illegible] JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] 68	JRK
	CS	REVISION STATUS CHANGED		[illegible] FEB	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		15 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		[illegible] MAR 68	JRK
	DG	REVISION STATUS CHANGED		28 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J.

UNLESS OTHERWISE SPECIFIED
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN M.S. MUELLER DATE 27 OCT 67
CHECKED [illegible]
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
KIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34856		27 OCT 67	DS
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	[illegible]	
	CH	REVISION STATUS CHANGED		[illegible] 67	JRK
	CJ	REVISION STATUS CHANGED		[illegible] DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		13 MAR 68	JJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		[illegible] APR 68	JJJ
	DH	REVISION STATUS CHANGED		8 MAY 68	JJ
	DJ	REVISION STATUS CHANGED		[illegible] 68	LK
	DK	REVISION STATUS CHANGED		[illegible] 68	LK
	DL	REVISION STATUS CHANGED		[illegible] JUN 68	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS. DRAWN W. S. MUELLER DATE 27OCT67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL APPROVAL	A C. METZGER NASA APPROVAL M MURLEY GOVT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE SHEET 4 OF 14

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	[illegible] 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		5 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	H.N.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	K
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		3 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	K RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	
	DL	REVISION STATUS CHANGED		4 JUN 68	J

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G&N 203,204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12,20
36.2		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110,121,122,123,124,111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
RIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 5 OF 14

DL 1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RL RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible]	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		3 JUN 68	J.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
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A.C. METZGER
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W. KUPFER
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SHEET 6 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051 2007200-061	8102696	2007200-081 2007200-071	G&N 203,204 & SPARE NO. 1
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041 1015500-051	8102686	1015500-071 1015500-081	G & N 12 121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILLATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
				ECP-4028	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 207,208 & 209

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP RWM
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 36098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		[illegible] APR 68	JJJ
	DH	REVISION STATUS CHANGED		5 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	J.

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GENERAL MOTORS CORP MILWAUKEE WIS
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APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
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E. AUSTIN
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CODE IDENT NO. 99974
1021200
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SHEET 7 OF 14

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 351 & 597	2014578-081 2014656-081 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-081 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021298-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0 =	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N 18)	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 568	2021290-021 2021208	8102737	2021290-031 2021619

REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	1 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR 35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		25 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		68	
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		26 FEB 68	JRK
	DA	REVISION STATUS CHANGED		5 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		15 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		APR 68	JJJ
	DH	REVISED PER TDRR 36153		MAY 68	
	DJ	REVISION STATUS CHANGED		[illegible]	
	DK	REVISED PER TDRR 36239		[illegible]	
	DL	REVISED PER TDRR 36260		3 JUN 68	

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DRAWN W. S. MUELLER DATE 27 OCT 67
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E. AUSTIN
RFT APPROVAL

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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 9 OF 16

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603 ↕				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609 ↕				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051, -071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061, -081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM						
64.3					2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.4					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.5					2007222-101	8102743	2007222-191	203,204
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551 ↕	2007234-011	8102731 ↕	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624 ↕	6007010-011	8102749 ↕	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		15 JAN 68	
	CP	REVISED PER TDRR 35266		25 JAN 68	JRK
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	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		23 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J3

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 Oct 67
CHECKED 5 Nov 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

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APOLLO G&N
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 8),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205,207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 &	6014512-011	8102764	6014512-071	602
			N/A	ECP-594	6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102736	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY	LK
	DK	REVISED PER TDRR 36239		[illegible] 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A C METZGER
NASA APPROVAL
E AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 14.

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		15 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		26 APR 68	JJ
DH		REVISION STATUS CHANGED		3 MAY 68	JJ
DJ		REVISION STATUS CHANGED		68	LK RWH
DK		REVISION STATUS CHANGED		68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	J

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECR NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU	—		2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

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NEXT ASSY	USED ON
APPLICATION	

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DRAWN W. S. MUELLER DATE 27 OCT 67
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CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

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MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2				│	1899950-051		1899950-091	G & N 12 & SPARE
15.3				│	1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONTROL PANEL ASSY	0102623	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		16-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM

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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
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SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BP RWY
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		19 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTV
	CL	REVISION STATUS CHANGED		5 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	P.N.
	CN	REVISION STATUS CHANGED		17 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE NONE | SHEET 5 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RJP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ YM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

DM 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ VM

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU	—		2018601-201	8102773	2018601-231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	

DE THIS SHEET ADDED.

ND1000000
NEXT ASSY | USED ON
APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
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CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
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SCALE — | SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	DSF
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	
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	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ

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+ — + — + —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M MURLEY
MIT APPROVAL

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	CG	REVISION STATUS CHANGED	-	20 NOV 67	JSM
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	CK	RIVISION STATUS CHANGED		28 DEC 67	
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	CN	REVISION STATUS CHANGED		17-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26-JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ ___ + ___ + ___
- - -
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 14

N° 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G & N 204 THRU 209
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204 THRU 209
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	[illegible] 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A N
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	
	CW	REVISION STATUS CHANGED		4 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		21 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 [illegible] 67
APPROVAL
CONTRACT NAS 9-497
A.C METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

1021200

NO. 1021200				

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		5 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4 JUN 68	JB
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		68	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102687	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207 208, 209, TWO BLK II SPARES
		IMU			2018601-161	8102768	2018601-201	
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

ND1000009	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible]ALKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 13 OF 14

1021200

ITEM No.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	——	ECP-25	——	8102602	——	——
2.1		POWER & SERVO ASSY	0102600	▲	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	▼	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	——	0102601	ECP-20	——	8102613	——	G & N 20
3.1		COUPLING DISPLAY UNIT		▲	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		▼	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	——	8102611	——	G & N 20
4.1		G&N HARNESS & END CONNECTOR		▲	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		▼	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	——	8102622	——	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		▲	——		1899950-031	G & N 8
5.2				▼	——		1899950-041	G & N 20
5.3				ECP-130	——		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	——	8102648	——	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					▲ -051		▲ -081	"50" SPARE
					▼ -071		▼ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	BLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
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	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DH	REVISION STATUS CHANGED		3 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		20 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
	DM	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUL 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA

NEXT ASSY	0100000
USED ON	
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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CHECKED [illegible] 3 NOV 67
APPROVAL
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NASA APPROVAL A.C. METZGER
NIT APPROVAL R. MILLARD

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	C102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			C102622	ECP-169	1C14578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,269,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1C15056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1C07570-011		1007570-021	100 SERIES
21.2		IMU			1C01500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP 267	1015500 021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE F_R TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible]-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] 68	
	CW	REVISION STATUS CHANGED		[illegible] FEB 68	
	CY	REVISION STATUS CHANGED		20 [illegible] 68	
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DE	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DF	REVISION STATUS CHANGED		[illegible] 68	JRK
	DG	REVISION STATUS CHANGED		[illegible]	JJJ
	DH	REVISION STATUS CHANGED		[illegible] MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] 68	
	DK	REVISION STATUS CHANGED		[illegible]	
	DL	REVISION STATUS CHANGED		[illegible] 68	
	DM	REVISION STATUS CHANGED		[illegible]	
	DN	REVISION STATUS CHANGED		[illegible]	JJJ
	DP	REVISION STATUS CHANGED		[illegible]	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		29 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISION STATUS CHANGED		30 MAY 68	
	DL	REVISION STATUS CHANGED		4 JUN 68	J.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		[illegible] JUL 68	SA

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
~~27.4~~					~~1007570-021~~			~~G & N 110 THRU 124~~
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2			│	│	↑	│	↑	50 SERIES SPARE
33.3			│	│	│	│	│	100 SERIES SPARE
33.4			│	│	↓	│	↓	G & N 121
33.5			│	│	1899982-000	│	1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY	│	│	1011000-005	│	1011000-005	G & N 12
33.7			│	│	1011000-007	│	1011000-007	50 SERIES SPARE
33.8			│	│	2011000-001	│	2011000-001	G & N 121
33.9			│	│	2011000-021	│	2011000-022	G & N 122
33.10			│	│	2011000-021	│	2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP	│	│	1008535	│	1008535	G & N 12
33.12			│	│	1008535	│	1008535	G & N 121
33.13			│	│	1008535	│	1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY	│	│	1899950-091	│	1899950-091	G & N 12
33.1			│	│	↑ -161	│	↑ -161	50 SERIES SPARE
33.16			│	│	-141	│	-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W.S MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ———
SHEET 3 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWM
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		[illegible] 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	AN
	CN	REVISION STATUS CHANGED		19 JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LR
	CZ	REVISION STATUS CHANGED		[illegible] FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		24 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LR RWM
	DK	REVISION STATUS CHANGED		20 MAY 68	LR
	DL	REVISION STATUS CHANGED		4 JUN 68	J
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36840		6 JUL 68	RWM

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N 13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 123 & SPARE S/N 7,9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV, BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV, BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 27 OCT 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
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E. AUSTIN
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854	CHG NO	27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 [illegible] 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		[illegible] JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LR
	CW	REVISION STATUS CHANGED		14 FEB 68	
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LR RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LR
	DL	REVISED PER TDRR 36240		4 JUN 68	J.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUN 68	RWH

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N18)	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP569	2021290-041 2021309	8102737	2021290-031 2021419

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 [illegible] APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A. C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 16

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JJS
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JJB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	[illegible]
	CL	REVISION STATUS CHANGED		2 JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.H.
	CN	REVISION STATUS CHANGED		19 JAN 68	[illegible]
	CP	REVISED PER TDRR 35266		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	[illegible]
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] MAY 68	LK
	DK	REVISION STATUS CHANGED		[illegible] 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	J
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJ
	DP	REVISION STATUS CHANGED		8 JUL 68	[illegible]

CC THIS SHEET ADDED

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TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606(S/N 8)
					6014512-061	8102776	6014512-081	605,607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT-ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DI	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISED PER TDRR 36239		[illegible] 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH

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APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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A C ELECTRONICS

SIZE D
CODE IDENT NO 99974
1021200
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DP 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	KK RWH
DK		REVISION STATUS CHANGED		68	
DL		REVISION STATUS CHANGED		4-JUN-68	
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		8 JUL 68	SA RWH

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111	203, 204, 205, 206, 207, 208, 209, TWO BLOCK II SPARES, 210
		IMU			2018601-201	8102773	2018601 -231	204, 205, 206, 207, 208, 209, 210, TWO BLOCK II SPARES
		IMU & PEA ASSY			2007209-101		2007203-111	
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011	8102785	2021323-021	204
					2021334		2901628	
					2021335		2901629	
					2021290-021	8102786	2021290-041	1 SPARE, 206, 208 THRU 215
					2021425		2901628	
					2021426		2901629	

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NEXT ASSY	USED ON
APPLICATION	

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GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	—	0102601	ECP 20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251, 84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP 265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	PP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

ND 1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± —
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MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 OCT 67
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2				│	1899950-051		1899950-091	G & N 12 & SPARE
15.3				│	1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12, SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ
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MASTER RETROFIT KIT LIST
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(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		23 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
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GENERAL MOTORS CORP MILWAUKEE, WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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MIT APPROVAL M. MURLER

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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SIZE D
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1021200
SCALE —
SHEET 3 OF 14

REVISIONS

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	CM	REVISION STATUS CHANGED		[illegible] 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
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					1007484-011		1007484-021	
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					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
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					1007551-011		1007551-021	
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SHEET 4 OF 14

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	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	BP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	MB
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. I
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — –
3 PLACE DECIMALS + — –
ANGLES + — –
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK I.I	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	AR
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
W KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		24 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	
	DP	REVISED PER TDRR 36540		16 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3-[illegible]-67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 7 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 &211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N 13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4 54.5 54.6	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
		IMU		ECP-500	2018601-021	8102716	2018601-091	203
		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36840		8 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —

DO NOT SCALE THIS DRAWING

MATERIAL —

APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 27 [illegible] 67
APPROVAL
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WJF
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-081 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	206, 208, 209 215 SP (S/N18)	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A. C. METZGER NASA APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE · SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501, G & N 123, 502, G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	3 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

CC THIS SHEET ADDED

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TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 Oct 67
CHECKED 3 Nov 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		7 FEB 68	LK
	CW	REVISION STATUS CHANGED		4 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ

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3 PLACE DECIMALS + −
ANGLES + −
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 14.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G & N 204 & 205
				ECP-453	2010790-071		2010790-131	G & N 206
				ECP-475	2010790-091		2010790-141	G & N 207
				ECP-507	2010790-111		2010790-131	G & N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G & N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G & N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G & N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102766	2007200-141 2007093-081	G & N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102766	2010743-061	G & N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G & N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 588*	*2010744-041*	*8102765*	*2010744-081*	*G & N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G & N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014518-051*	*8102760*	*6014518-061*	*605 AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G & N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*205, 206 & 2 SPARES*
		G & N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		[illegible] 67	
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	AN.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	ZP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		24 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	JB.
DM		*REVISED PER TDRR 36314*		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		3 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ

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NASA APPROVAL A.C.METZGER
MIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

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REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		[illegible] MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJ
DJ		REVISION STATUS CHANGED		[illegible] MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	JB.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 [illegible] 68	[illegible]
DP		REVISION STATUS CHANGED		16 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	[illegible]
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603, ~~605~~ THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102897	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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DS 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	
DH		REVISION STATUS CHANGED		6 MAY 68	
DJ		REVISION STATUS CHANGED		20 MAY 68	RWH
DK		REVISION STATUS CHANGED		68	
DL		REVISION STATUS CHANGED		4-JUN-68	
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUL 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL-68	
DS		REVISED PER TDRR 36595		1 AUG 68	

ITEM NO.	DESCRIPTION	END ITEM	R I B NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU IMU & PEA ASSY	—		2018601-201 2007203-101	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		25 IRIG IMU IMU & PTA ASSY			2021800-081 2018601-191 6007001-101	8102774 8102773	2021500-111 2018601-221 6007001-121	605, 606, 607, 608, 609, 610, TWO LM SPARES
88.1		IMU IMU & PTA ASSY	—	ECP 653 & 688	2018601-211 6007001-111	8102763 8102773	2018601-221 6007001-121	603
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	1 SPARE, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE

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DRAWN W S MUELLER DATE 27 OCT 67
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SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.#.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JDM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		11 MAR 68	JJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		19 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ

NEXT ASSY	USED ON
NO 100000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL R. MILLARD

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP 169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	13 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 [illegible] 67	JJM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		[illegible] JAN 68	A.N.
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	
	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ
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1021200

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DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE	CODE IDENT NO.	
D	99974	1021200

SCALE — SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP 219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
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	DR	REVISION STATUS CHANGED		22 JUL 68	
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

1021200

DT 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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	CM	REVISION STATUS CHANGED		[illegible] JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
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	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		8 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ

1021200

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27OCT67
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CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M MURLEY
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE — | SHEET 4 OF 14

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		19 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		[illegible] JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		[illegible] JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	K
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
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	DR	REVISION STATUS CHANGED		22-JUL-68	
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					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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SHEET 5 OF [illegible]

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39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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1021200 DT

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46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

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DO NOT SCALE THIS DRAWING	DRAWN W.S MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 7 OF 12

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N 13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP 500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		18 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		20 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		8 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ
	DT	REVISION STATUS CHANGED		8 NOV 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854	[illegible] 3. NO	27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISED PER TDRR35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		19 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G&N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G&N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP569	2021290-041 2021309	8102737	2021290-031 2021419

CC THIS SHEET ADDED

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MATERIAL
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A C METZGER
NASA APPROVAL
E AUSTIN
KIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	[illegible] NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISED PER TDRR 35266		[illegible] JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	JB
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		16 JUL 68	RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSIT-ION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	URK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	URK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	URK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		24 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B
	DM	REVISION STATUS CHANGED		13 JUN 68	JJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	MJ
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ

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GENERAL MOTORS CORP MILWAUKEE WIS
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MASTER RETROFIT KIT LIST
APOLLO G&N
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SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 11 OF 14

1021200 DS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	
CH		REVISED PER TDRR 34946		[illegible] NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		[illegible] 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		24 APR 68	JJJ
DH		REVISED PER TDRR 36153		15 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK
DK		REVISION STATUS CHANGED		[illegible] 68	
DL		REVISION STATUS CHANGED		3 JUN 68	JB
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		[illegible] JUN 68	JJJ
DP		REVISED PER TDRR 36540		[illegible] JUL 68	
DR		REVISION STATUS CHANGED		[illegible]	
DS		REVISION STATUS CHANGED		[illegible]	
DT		REVISION STATUS CHANGED		[illegible]	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	PEPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102766	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
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MASTER RETROFIT KIT LIST
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CODE IDENT NO. 99974
1021200
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SHEET 12 OF 14

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35 743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 [illegible] 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		[illegible] MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4 JUN 68	
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	
DP		REVISION STATUS CHANGED		6 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.C
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.C

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
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MIT APPROVAL

MANNED
SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
APOLLO G&N
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SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 13 OF 14

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SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
REVISIONS					
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	URK
DG		REV. SION STATUS CHANGED		29 APR 68	
DH		REVISION STATUS CHANGED		6 MAY 68	
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	JB
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ TW
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		8 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22 JUL 68	
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO (REF)	AUTHORIZATION ECP NO OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU	—		2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901623 2901623	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE

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GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
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APPROVAL
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AC METZGER
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MIT APPROVAL

MANNED SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
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1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

1021200

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ANGLES ± ——
DO NOT SCALE THIS DRAWING
MATERIAL ——
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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	CG	REVISION STATUS CHANGED		30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

UNLESS OTHERWISE SPECIFIED
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2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.G.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISICN STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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MIT APPROVAL

MANNED SPACECRAFT CENTER
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MASTER RETROFIT KIT LIST
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SHEET 5 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28MAY 68	LK
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SCALE NONE
SHEET 6 OF 1-

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 7 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 &211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	M. G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.B.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		[illegible] 68	[illegible]
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

1021200

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 [illegible] 67
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 12

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N.
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

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	CC	THIS SHEET ADDED PER TDRR 34854		2 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.B.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	M.B.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.B.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED 31 OCT 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 14

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
REVISIONS					
	CC	THIS SHEET ADDED PER TDRR 34654		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
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	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	010269/	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	010269/		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	010269/		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	010269/	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

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ANGLES + — − —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
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SHEET 10 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ DPP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 14

1021200

DU 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G & N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G & N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G & N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G & N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G & N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G & N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G & N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	M.A.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

DU 1021200

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CZ		THIS SHEET ADDED PER TDRR 35582		28FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	JB
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M
DN		REVISION STATUS CHANGED		10 JUN 68	JJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 13 OF 14

MIL 1077 D-K

1021200

DU 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG		ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU IMU & PEA ASSY	—		2018601-201 2007203-101	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-011	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES

DE THIS SHEET ADDED

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MA
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MA.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 4

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY			1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
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	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ
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AC ELECTRONICS DIVISION
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DRAWN W.S. MUELLER DATE 27 OCT 67
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	——		ECP-306	——	——	——	——
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

1021200

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL ——
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.G.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		2[illegible] MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	M MURLEY MIT APPROVAL	SCALE SHEET 4 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↕	↕	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↕	↕	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↕	↕	1899950-051	↕	1899950-251	G & N 17
37.2			↕	↕	1899950-221	↕	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↕	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	↕	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↕	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.G.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
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UNLESS OTHERWISE SPECIFIED
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
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MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N, 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

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	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

1021200

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 6 OF 12

1021200 DV

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102696	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

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	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
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	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
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	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
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	DR	REVISION STATUS CHANGED		22-JUL 68	
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1021200 DV

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N. (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

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	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
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	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RIP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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SHEET 8 OF 12

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569,551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569,551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
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	CN	REVISED PER TDRR35145		19 JAN 68	M.H.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
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DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
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	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741 8102748	2007238-051,-071 2007238-061,-081	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM		↕	2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3				↕	2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4				↕	2007222-101	8102743	2007222-191	203,204
64.5				↕				
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"		↕	2014803	↕	2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A	↕	2007235-011	↕	2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A	↕	2007271-011	↕	2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691	↕	6007013-011	↕	6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + – 3 PLACE DECIMALS + – ANGLES + –	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING		
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
				ECP-590F &612				
67.0	REMOVE ANTICREEP MODULE							
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT- ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSI- TION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WIT CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ + +
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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 14

DV 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	0102688	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204 THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	*605 AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*205, 206 & 2 SPARES*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	DSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.R.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ RLP
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.W
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

NEXT ASSY	USED ON
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APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S.MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 13 OF 14

1021200

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		30 DEC 68	APS J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU			2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-181	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011	8102785	2021323-021	204
					2021334		2901628	
					2021335		2901629	
					2021290-021	8102786	2021290-041	205, 206, 208 THRU 215
					2021425		2901628	
					2021426		2901629	
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES

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NEXT ASSY	USED ON
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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
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CONTRACT NAS 9-497
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NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	M.A.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.A.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.A.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

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APPLICATION

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3 PLACE DECIMALS ±
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014576-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
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	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 12

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.A.
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	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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3 PLACE DECIMALS + — −
ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM RB
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M S
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
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	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
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	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL APPROVAL	A.C. METZGER NASA APPROVAL M MURLEY MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE SHEET 4 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. I
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654	│	1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
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	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
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	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISION STATUS CHANGED		[illegible] 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED 5 NOV 67 APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DO NOT SCALE THIS DRAWING		MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)	
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D	CODE IDENT NO. 99974
APPROVAL	W. KUPFER MIT APPROVAL	SCALE NONE	1021200 SHEET 5 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

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GENERAL MOTORS CORP. MILWAUKEE WIS.
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CONTRACT NAS 9-4...
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 6 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL- ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JJJ
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	CF	REVISED PER TDRR 34906	–	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
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MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 7 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34851		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
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	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
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SHEET 8 OF 15

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.H.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	M.H.
	CP	REVISION STATUS CHANGED		24JAN 68	JRK
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	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569,551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569,551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP569	2021290-041 2021309	8102737	2021290-031 2021419

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	NASA APPROVAL A.C. METZGER MIT APPROVAL E. AUSTIN	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011 2007238-021	8102741 8102748	2007238-051,-071 2007238-061,-081	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.H.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.H.
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	JC

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THFU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDF 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	JK

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 4

DW 1021200 2

ITEM NO	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	605 *AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	
CG		REVISED PER TDRR 34914		30 NOV 67	WSM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		*REVISED PER TDRR 36131*		29 APR 68	JJJ RSP
DH		*REVISED PER TDRR 36153*		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		*REVISION STATUS CHANGED*		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	B.
DM		*REVISED PER TDRR 36314*		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		8 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 1-

DW 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
CZ		THIS SHEET ADDED PER TORR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		[illegible] 68	JA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ THIS SHEET ADDED

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 13 OF 14

1021200

DW 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ T.W.
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		30 DEC 68	APS J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	JK

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU			2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28 VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES

DE THIS SHEET ADDED

ND1000000		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	**AC ELECTRONICS DIVISION** GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED MALIKOWSKI 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
APPLICATION		MATERIAL — APPROVAL	AC METZGER NASA APPROVAL R MILLARD MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE — SHEET 14 OF 14

1021200

MIL 10770 K

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600		1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP			1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY			1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2					—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					-071		-101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.A.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.A.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
Ⓜ	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
Ⓜ	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
Ⓜ	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
Ⓜ	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
Ⓜ	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
Ⓜ	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
(AV)	DR	REVISION STATUS CHANGED		22-JUL 68	M.L.
Ⓜ	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
Ⓜ	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
(AV)	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
Ⓜ	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
Ⓜ	DW	REVISION STATUS CHANGED		16 APR 69	JK
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.W.

ND 1000000	
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ANGLES ± —
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL R. MILLARD

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

REV LTR DY 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ V.M
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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SHEET 2 OF 14

1021200 DY

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		23 MAY 68	LK
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SHEET 3 OF 14

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

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	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
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					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. I
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.S.
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
Ⓜ	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
Ⓜ	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
Ⓜ	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
Ⓜ	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
Ⓜ	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
Ⓜ	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
Ⓜ	DR	REVISION STATUS CHANGED		22-JUL 68	M.B.
Ⓜ	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
Ⓜ	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
Ⓜ	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
Ⓜ	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
Ⓜ	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL W. KUPFER MIT APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL		SCALE NONE · SHEET 3 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34654		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 [illegible] 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.

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TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS [illegible]
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-. ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

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	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
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	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
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	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 11

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 &211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	/DDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMELY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.B.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUL 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	M.G.
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 69	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 15

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.B.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	M.B.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SH RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.B.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP569	2021290-041 2021309	8102737	2021290-031 2021419

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	**AC ELECTRONICS DIVISION** GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	(1) SPARE HEADER ASS'Y
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	[illegible]
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	[illegible]
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ

1021200

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU W H CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	JK
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS +/− 3 PLACE DECIMALS +/− ANGLES +/−
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS9-497
A C METZGER
NASA APPROVAL
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SIZE D
CODE IDENT NO. 99974
1021200
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SHEET 11 OF 14

DY 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
C		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	JSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	M.G.
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISED PER TDRR 36540		13 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	M.A.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	JK
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

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NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

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SIZE D
CODE IDENT NO. 99974
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SHEET 12 OF 14

1021200 DY

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ RH
DH		REVISION STATUS CHANGED		6 MAY 68	JJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	JB.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISION STATUS CHANGED		8 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	m.g.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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SHEET 13 OF 14

1021200

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SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
REVISIONS					
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
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DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		30 DEC 68	AFS J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	
DY		REVISED PER TDRR 37788		3 SEP 69	JJJ

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU			2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE –
SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	—		1899950-031	G & N 8
5.2				↓	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

ND 1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
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SHEET 1 OF 14

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14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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AC ELECTRONICS DIVISION
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DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS 9-497
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APPOLLO G & N
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SIZE D
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1021200
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SHEET 2 OF 12

DZ 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

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SHEET 3 OF 14

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34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.S.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.S.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 [illegible] 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN W.S. MUELLER DATE 27OCT67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
DO NOT SCALE THIS DRAWING		
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	M MURLEY MIT APPROVAL	SCALE SHEET 4 OF 14

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	MH
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MH
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	MH
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 5 OF 12

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 1[illegible]

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.G.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
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	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

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MATERIAL
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

1021200

DZ 1021200

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.H.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR 35145		19 JAN 68	M.H.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36387		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

1021200

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	**AC ELECTRONICS DIVISION** GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED [illegible] APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING		MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJ
	DP	REVISION STATUS CHANGED		16 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

1021200

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597,	2014567-041	8102742	2014567-061	204
		G & N HARNESS A		ECP-627 &	2010774		2021312	
		G & N HARNESS B		ECP-551	2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A		ECP-627 &	2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B		ECP-551	2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606(S/N 8)
					6014512-061	8102776	6014512-081	605,607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACE REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		[illegible] MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		23 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	JX
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.

UNLESS OTHERWISE SPECIFIED
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2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 4

DZ 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102756	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	*605 AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*205, 206 & 2 SPARES*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WSM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A.
CM		REVISED PER TDRR 35128		11 JAN 68	H.N.
CN		REVISION STATUS CHANGED		19-JAN 68	M.G.
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		[illegible] 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	M.A.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	JK
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G

CF **THIS SHEET ADDED**

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APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
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APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

DZ 1021200

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605), (606), (609) (607) TWO LEM SPARES
		IMU			2018601-151	8102768	2018601-191	
		IMU & PTA ASS'Y			6007001-091		6007001-101	
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207 208, 209, TWO BLK II SPARES
		IMU			2018601-161	8102768	2018601-201	
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

NEXT ASSY	USED ON
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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 13 OF 14

MIL 10770-K

DZ 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		30 DEC	APS
DW		REVISED PER TDRR 37513		16 APR 69	JK
DY		REVISED PER TDRR 37788		8 SEP 69	JJJ
DZ		REVISED PER TDRR 37810		24 SEP 69	M.G.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU			2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011	8102785	2021323-021	204
					2021334		2901628	
					2021335		2901629	
					2021290-021	8102786	2021290-041	205, 206, 208 THRU 215
					2021425		2901628	
					2021426		2901629	
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222
94.0	COMPUTER AIDED OPTICS TRACKING	G&N INDICATOR CONTROL PANEL ASSEMBLY		ECP 792	2021290-041	8102791	2021290-051	205, 213 & SUBSEQUENT PLUS 2 SPARES
					2021290-031	8102792	2021290-061	

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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MA
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MA
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	PP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

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APPLICATION

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3 PLACE DECIMALS ± —
ANGLES ± —
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

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	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	
	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ V.M.
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ———
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	-	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
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	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
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	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ T.M.
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	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL M. MURLER MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE — SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
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	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
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	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
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	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE
SHEET 4 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. I
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY					1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6							1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649		2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645		6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 3485+		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL W. KUPFER MIT APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL		SCALE NONE · SHEET 6 OF 12

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	M.B.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.B.
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	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.B.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILLATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 7 OF 1[illegible]

MIL 1052D

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NC. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674 0102700	ECP-0428 ECP-0428R2	 1021373-031	8102705 8102779	 1021373-061	G&N 204,205,206,208,209 & 211 G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428 ECP-0428R2	2010790-011	8102680 8102780	2010790-051 2010790-171	G & N 202 (OUA S/N13) G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS &	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2	REPLACE PIP PREAMP				2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU PIP PREAMP	0102678	ECP-500 ECP-500	1001500-091 1008285-011	8102709 8102711	1001500-111 1008285-021	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

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	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.C.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	-	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	WTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.B.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	M.B.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ ESP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.B.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
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SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE		↕	2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A	↕	2007270-011	↕	2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691	↕	6007016-011	↕	6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

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	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
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	CP	REVISED PER TDRR 35266		29 JAN 68	JRK
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	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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SHEET 10 OF 14

1021200 EA

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071	FOR A4 &	6007001-081	(607), (LEM SPARE)
		IMU			2018601-081	A5 POSI-	2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051	TION	2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031	POSIT- ION)	2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS ANDμ REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734	2018601-121	7(203)
		IMU & PEA			2007203-061	FOR A4 & A5 POSI- TION. 8102762 FOR A6 POS. 8102757	2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
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CF		THIS SHEET ADDED PER TDRR34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	WSM
CH		REVISED PER TDRR 34946		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	M.B.
CP		REVISION STATUS CHANGED		24 JAN 68	JRK
CR		REVISED PER TDRR 35269		26 JAN 68	JRK
CS		REVISION STATUS CHANGED		2 FEB 68	JRK
CT		REVISED PER TDRR 35498		5 FEB 68	JRK
CU		REVISED PER TDRR 35500		6 FEB 68	JRK
CV		REVISION STATUS CHANGED		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		REVISION STATUS CHANGED		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ DJP
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	M.A.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE	NAVIGATION BASE ASSY, BLOCK II	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION							
78.1		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS	COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	ADD VHF RANGING SIGNALS	G&N INTERCONNECT HARNESS GROUP (BLK II)		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — − 3 PLACE DECIMALS + — − ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 12 OF 14

EA 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ RHP
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	JB.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 [illegible] 68	
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	—	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	—		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	—		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	—		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	—		2018602-041		2018602-051	
		IMU	—		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	—		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	—		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	—		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	—	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	—		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	—		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	—		2018602-021		2018602-061	
		IMU	—		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	—		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	—		2010747-051		2010747-071	
		WIRING HARNESS "A"	—		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	—	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	—		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	—		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	—		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	—		2018602-011		2018602-071	
		IMU	—		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	—		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	—		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	—		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	—		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

NEXT ASSY: ND1000000	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
USED ON	DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED MALIKOWSKI 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G&N (A C ELECTRONICS)	
APPLICATION	MATERIAL	AC. METZGER NASA APPROVAL R. MILLARD	SIZE D	CODE IDENT NO. 99974
	APPROVAL	MIT APPROVAL	SCALE —	1021200 SHEET 13 OF 14

1021200

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 [illegible] 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		[illegible] 68	J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	JK
DY		REVISED PER TDRR 37788		3 SEP 69	JJJ
DZ		REVISED PER TDRR 37810		24 SEP 69	J.G.
EA		REVISED PER TDRR 37838		3 OCT 69	JJJ RWH

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU			2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222 (211, 212 AND 214 ARE TO BE RETROFITTED ONLY IF THE EYEPIECE RETAINER FAILS)
94.0	COMPUTER AIDED OPTICS TRACKING	G&N INDICATOR CONTROL PANEL ASSEMBLY		ECP 792	2021290-041	8102791	2021290-051	205, 213 & SUBSEQUENT PLUS 2 SPARES
					2021290-031	8102792	2021290-061	

DE THIS SHEET ADDED

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + −
3 PLACE DECIMALS + −
ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE −
SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	——	ECP-25	——	8102602	——	——
2.1		POWER & SERVO ASSY	0102600	↑	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↓	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP-20	——	8102613	——	G & N 20
3.1		COUPLING DISPLAY UNIT		↑	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↓	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	——	8102611	——	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↑	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↓	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	——	8102622	——	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		↑	——		1899950-031	G & N 8
5.2				↓	——		1899950-041	G & N 20
5.3				ECP-130	——		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	——	8102648	——	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↑ -051		↑ -081	"50" SPARE
					↓ -071		↓ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WJM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MA
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MA
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.A.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	

ND 1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ______
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL R. MILLARD

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —— SHEET 1 OF 1

1021200

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
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	DK	REVISION STATUS CHANGED		28 MAY 68	LK/H
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ Y.M
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	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265. & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

EB 1021200

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	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
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+ ___ + ___ + ___
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SIZE D
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1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
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					1007551-011		1007551-021	
					1007552-011		1007552-021	

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	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MJ
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		8 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27OCT67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL M MURLEY MIT APPROVAL	SIZE D · CODE IDENT NO. 99974 · 1021200
APPROVAL		SCALE · SHEET 4 OF 14

EB 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.G.
	CP	REVISION STATUS CHANGED		29 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
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	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
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1021200

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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

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	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
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	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILLATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.G.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		10 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	GW

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 7 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 &211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
54.2					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5		IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102661	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321		1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311	8102728	1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
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CONTRACT NAS9-497
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NASA APPROVAL
E. AUSTIN
MIT APPROVAL

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 15

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 RI	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

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	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	MB
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR 35145		19 JAN 68	MB
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
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	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	MB
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	JK
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	JW

1021200

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603 ↕				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609 ↕				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051,-071 2007238-061,-081	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551 ↕	2007234-011	8102731 ↕	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND. ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624 ↕	6007010-011	8102749 ↕	6007010-021	G & N 602,603,605, 606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

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	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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	DR	REVISION STATUS CHANGED		22-JUL 68	M.E.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 1[illegible]

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
			N/A		6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		6 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		[illegible] 68	RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	MG
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	JK
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	JW

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2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
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MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 4

EB 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL. & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	*0102688*	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	*605 AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*205, 206 & 2 SPARES*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		3 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	DSM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	M.A.
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		[illegible] 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		REVISED PER TDRR 36131		29 APR 68	JJJ RP
DH		REVISED PER TDRR 36153		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		*REVISION STATUS CHANGED*		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	B.
DM		*REVISED PER TDRR 36314*		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR 70	

CF **THIS SHEET ADDED**

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL E. AUSTIN

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR 70	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608 (INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

CZ **THIS SHEET ADDED**

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + – 3 PLACE DECIMALS + – ANGLES + –
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S.MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLLO G&N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE —
SHEET 13 OF 14

EB 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ V.M.
DV		REVISED PER TDRR 37155		30 DEC 68	AFS J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	JK
DY		REVISED PER TDRR 37788		8 SEP 69	JJJ V.M.
DZ		REVISED PER TDRR 37810		24 SEP 69	M.G.
EA		REVISED PER TDRR 37838		3 OCT 69	JJJ RWH
EB		REVISED PER TDRR 38074		31 MAR 70	

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU IMU & PEA ASSY			2018601-201 2007203-101	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		25 IRIG IMU IMU & PTA ASSY			2021500-081 2018601-191 6007001-101	8102774 8102773	2021500-111 2018601-221 6007001-121	605, 606, 607, 608, 609, 610, TWO LM SPARES
88.1		IMU IMU & PTA ASSY	—	ECP 653 & 688	2018601-211 6007001-111	8102763 8102773	2018601-221 6007001-121	603
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222 (211, 212 AND 214 ARE TO BE RETROFITTED ONLY IF THE EYEPIECE RETAINER FAILS)
94.0	COMPUTER AIDED OPTICS TRACKING	G&N INDICATOR CONTROL PANEL ASSEMBLY		ECP 792	2021290-041 2021290-031	8102791 8102792	2021290-051 2021290-061	205, 213 & SUBSEQUENT PLUS 2 SPARES
95.0	REVERSE BIAS CORRECTION CAPACITOR C9 P/N 1006789-002 TO BE DISABLED IN THE POWER SUPPLY -28 VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 2007093-081 OR 2007093-091.	POWER AND SERVO ASSEMBLY	N/A	ECP 796	2007200-151	8102795	2007200-161	G&N 205, 213 THRU 222 & 3 SPARE PSA (G&N 214 THRU 220 ARE TO BE RETROFITTED ONLY IF UNIT IS RETURNED FOR REPAIR).
95.1		POWER SUPPLY -28VDC	N/A	ECP 796	2007107-011		2007107-021	
95.2		HEADER ASSEMBLY	N/A	ECP 796	2007093-081	8102794	2007093-101	1 SPARE

DE THIS SHEET ADDED

ND1000000	
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3 PLACE DECIMALS ±
ANGLES ±
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	——	——	ECP-25	——	8102602	——	——
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	——	0102601	ECP-20	——	8102613	——	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	——	0102603	ECP-63	——	8102611	——	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	——	0102609	ECP-130	——	8102622	——	——
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	——		1899950-031	G & N 8
5.2				↕	——		1899950-041	G & N 20
5.3				ECP-130	——		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	——	8102648	——	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					-071		-101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	M.A.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.A.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	PP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	J.B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.A.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP

ND 1000000	
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DO NOT SCALE THIS DRAWING
MATERIAL ——
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S MUELLER DATE 27 OCT 67
CHECKED [illegible] 3 NOV 67
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MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 1 OF 4

EC 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	5 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	H.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
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	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL ——— APPROVAL	A.C. METZGER NASA APPROVAL W. KUPFER MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200 SCALE — SHEET 2 OF 12

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	[illegible]
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	[illegible]
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		[illegible] FEB 68	[illegible]
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.D.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
M. MURLER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1C07402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200
SCALE
SHEET 4 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-01		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	——	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
Ⓝ	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
Ⓝ	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
Ⓝ	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
Ⓝ	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
Ⓝ	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
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	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
Ⓝ	DR	REVISION STATUS CHANGED		22-JUL 68	
Ⓝ	DS	REVISION STATUS CHANGED		AUG 68	JJJ J.E.G.
Ⓝ	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
Ⓝ	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
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Ⓝ	DW	REVISION STATUS CHANGED		16 APR 69	
Ⓝ	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
Ⓝ	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
Ⓝ	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
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MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
43.0	CORROSION PROTECTION			ECP-388				
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP C/M BLOCK II	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		[illegible] 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ + +
− − −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCIL-ATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

REVISIONS

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	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	–	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 Nov 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 7 OF

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4 54.5 54.6	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
		IMU		ECP-500	2018601-021	8102716	2018601-091	203
		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10 54.11	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
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	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	M.G.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	M.G.
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
	DN	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	M.W.
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
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MATERIAL —

APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED 31 OCT 67
APPROVAL
CONTRACT NAS 9-497

A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021200

SCALE NONE | SHEET 8 OF 15

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349.
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.H
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR35145		19 JAN 68	M.E
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
Ⓜ	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
Ⓜ	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
Ⓜ	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
Ⓜ	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR36239		28 MAY 68	LK
Ⓜ	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M
Ⓜ	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
Ⓜ	DR	REVISION STATUS CHANGED		22-JUL 68	M.H.
Ⓜ	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
Ⓜ	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
Ⓜ	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
Ⓜ	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
Ⓜ	DW	REVISION STATUS CHANGED		16 APR 69	
Ⓜ	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
Ⓜ	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
Ⓜ	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
Ⓜ	EB	REVISION STATUS CHANGED		31 MAR 70	SW
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP

CC **THIS SHEET ADDED**

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
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SIZE D CODE IDENT NO. 99974 1021200
SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

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	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
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	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	M.A.
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	M.A.
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		[illegible] FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
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SHEET 10 OF 14

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67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSIT-ION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS ANDμ REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSI-TION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
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	DK	REVISED PER TDRR 36237		29 MAY 68	LK
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DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
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NASA APPROVAL A C METZGER
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72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	0102688	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	*0102696*	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	*605 AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*205, 206 & 2 SPARES*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		15 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	JSM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	A.N.
CN		REVISION STATUS CHANGED		19-JAN 68	
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	PP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		*REVISED PER TDRR 36131*		29 APR 68	JJJ
DH		*REVISED PER TDRR 36153*		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		*REVISION STATUS CHANGED*		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	B.
DM		*REVISED PER TDRR 36314*		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR 70	
EC		REVISION STATUS CHANGED		15 SEP 70	PHG CP

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NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + – 3 PLACE DECIMALS + – ANGLES + –
DO NOT SCALE THIS DRAWING
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

MIL 1077D-K

EC 1021200

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	.B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		10 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	M.G.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR 70	
EC		REVISION STATUS CHANGED		15 SEP 70	PHG CP

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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APPLICATION

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DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE — SHEET 13 OF 14

1021200

MIL 10770-K

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		23 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		[illegible] 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		[illegible] 68	J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	JK
DY		REVISED PER TDRR 37788		3 SEP 69	JJJ
DZ		REVISED PER TDRR 37810		24 SEP 69	MG
EA		REVISED PER TDRR 37838		3 OCT 69	JJJ RWH
EB		REVISED PER TDRR 38074		31 MAR 70	
EC		REVISED PER TDRR 38243		15 SEP 70	PHG CP

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU IMU & PEA ASSY			2018601-201 2007203-101	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		25 IRIG IMU IMU & PTA ASSY			2021500-081 2018601-191 6007001-101	8102774 8102773	2021500-111 2018601-221 6007001-121	605, 606, 607, 608, 609, 610, TWO LM SPARES
88.1		IMU IMU & PTA ASSY	←	ECP 653 & 688	2018601-211 6007001-111	8102763 8102773	2018601-221 6007001-121	603
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222 (211, 212 AND 214 ARE TO BE RETROFITTED ONLY IF THE EYEPIECE RETAINER FAILS)
94.0	COMPUTER AIDED OPTICS TRACKING	G&N INDICATOR CONTROL PANEL ASSEMBLY		ECP 792	2021290-041 2021290-031	8102791 8102792	2021290-051 2021290-061	205, 213 & SUBSEQUENT PLUS 2 SPARES
95.0	REVERSE BIAS CORRECTION CAPACITOR C9 P/N 1006789-002 TO BE DISABLED IN THE POWER SUPPLY -28 VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 2007093-081 OR 2007093-091.	POWER AND SERVO ASSEMBLY	N/A	ECP 796	2007200-151	8102795	2007200-161	G&N 205, 213 THRU 222 & 3 SPARE PSA (G&N 214 THRU 220 ARE TO BE RETROFITTED ONLY IF UNIT IS RETURNED FOR REPAIR).
95.1		POWER SUPPLY -28VDC	N/A	ECP 796	2007107-011		2007107-021	
95.2		HEADER ASSEMBLY	N/A	ECP 796	2007093-081	8102794	2007093-101	1 SPARE
96.0	MODIFY OUA WITH NEW LUBRICANT FOR BEARINGS AND GEARS AND NEW LIGHT ROD ASSEMBLY.	OPTICAL UNIT AND BELLOWS ASSEMBLY	N/A	ECP 1013	2010790-181	N/A	2010790-191	APOLLO 17 AND SUBSEQUENT

DE THIS SHEET ADDED

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NEXT ASSY	USED ON
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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 14 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK No.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600		1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600		1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE-PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT			1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP			1014513-011	8102604	1014513-021	S/N C
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR			1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY			1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY			—		1899950-031	G & N 8
5.2					—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031	8102626	1015065-051	17, 12, 110 THRU 124
					1015065-041	8102626	1015065-061	
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					-051		-081	"50" SPARE
					-071		-101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	MA
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MA
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
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	CV	REVISION STATUS CHANGED		8 FEB 68	LK
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	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RSP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.A.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP

NEXT ASSY	USED ON
ND 1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — − —
3 PLACE DECIMALS + — − —
ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 14

1021200

ED 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↑	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4				↓	1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

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	CN	REVISION STATUS CHANGED		16-JAN 68	
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	DK	REVISICN STATUS CHANGED		28 MAY 68	LK
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	DM	REVISION STATUS CHANGED		13-JUN 68	JJJ V.M
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 2 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE	↑	↑	1899982-000	↑	1899982-011	G & N 12
33.2					↑		↑	50 SERIES SPARE
33.3								100 SERIES SPARE
33.4					↓		↓	G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					↑ -161		↑ -161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17			↓	↓	↓ -131	↓	↓ -131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

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	CG	REVISION STATUS CHANGED		30 Nov 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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DRAWN W.S. MUELLER DATE 27 OCT 67
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MANNED
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MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		8 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP

1021200

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27OCT67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M MURLEY

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE
SHEET 4 OF 14

ED 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	——	—	ECP-248	—	—	—	——
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. 1
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

REVISIONS

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	RIVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	F.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	JB.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP

1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — − — 3 PLACE DECIMALS + — − — ANGLES + — − —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED 3 NOV 67 APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)
MATERIAL —	A.C. METZGER NASA APPROVAL W. KUPFER MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 5 OF 17

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 &211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4 54.5 54.6	CONFORMAL COAT WIRE TERMINALS AND REPLACE PIP PREAMP	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
		IMU		ECP-500	2018601-021	8102716	2018601-091	203
		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10 54.11	CONFORMAL WIRE TERMINALS AND REPLACE PIP PREAMP	IMU & PTA		ECP-500	6007001-051		6007001-071	604
		IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISED PER TDRR 36535		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
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2 PLACE DECIMALS + − | 3 PLACE DECIMALS + − | ANGLES + −
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED [illegible] 2 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 14

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349.
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

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	CL	REVISION STATUS CHANGED		2-JAN 68	M.B
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISED PER TDRR 35145		19 JAN 68	M.E
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	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
Ⓜ	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
Ⓝ	DG	REVISION STATUS CHANGED		29 APR 68	JJJ KSP
Ⓝ	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
Ⓝ	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
Ⓝ	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
Ⓜ	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
Ⓝ	DR	REVISION STATUS CHANGED		22-JUL 68	
Ⓝ	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
Ⓝ	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
Ⓝ	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
Ⓝ	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
Ⓝ	DW	REVISION STATUS CHANGED		16 APR 69	
Ⓝ	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
Ⓝ	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
Ⓝ	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
Ⓝ	EB	REVISION STATUS CHANGED		31 MAR 70	SW
Ⓦ	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP

1021200

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___	**AC ELECTRONICS DIVISION** GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
DO NOT SCALE THIS DRAWING MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 9 OF 14

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741	2007238-031 2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011 2007238-021	8102741 8102748	2007238-051,-071 2007238-061,-081	SPARES & G&N MODULES
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013 021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		OCT 67	JSC
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	8 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJ
	DP	REVISION STATUS CHANGED		13 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ + +
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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED DATE 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER,SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202 (S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSI-TION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSIT-ION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR 4 & A5 POSI-TION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		4 FEB 68	
	CY	REVISION STATUS CHANGED		26 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		68	RWH
	DK	REVISED PER TDRR 36239		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + –
3 PLACE DECIMALS + –
ANGLES + –
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 4

1021200

ED 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	0102688	*ECP 630*	*2899982-011*	*8102750*	*2899982-031*	*G&N 202, 205 THRU 209*
			0102688	*ECP 630*	*2899982-021*	*8102750*	*2899982-041*	*G&N 204*
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	0102696	*ECP 582*	*2010744-041*	*8102765*	*2010744-081*	*G&N 602*
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	0102696	*ECP 612*	*2010744-051*	*8102765*	*2010744-091*	*G&N 202*
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		*ECP 422*	*6014512-051*	*8102760*	*6014512-061*	*605 AND SPARE*
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		*ECP 667*	*2014567-061*	*8102769*	*2014567-071*	*205, 206 & 2 SPARES*
		G&N I/C HARNESS "A"			*2021312*		*2021406*	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	JJ
CG		REVISED PER TDRR 34914		30 NOV 67	JSM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	DL
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2-JAN 68	MA
CM		REVISED PER TDRR 35128		11 JAN 68	L.N.
CN		REVISION STATUS CHANGED		19-JAN 68	M.G.
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		*REVISED PER TDRR 36131*		29 APR 68	JJJ RP
DH		*REVISED PER TDRR 36153*		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		*REVISION STATUS CHANGED*		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	B.
DM		*REVISED PER TDRR 36314*		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	M.A.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	GK
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR 70	GW
EC		REVISION STATUS CHANGED		15 SEP 70	PHG CP
ED		*REVISION STATUS CHANGED*		10 FEB 71	REB CP

CF **THIS SHEET ADDED**

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DIMENSIONS ARE IN INCHES
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2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 14

ED 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		6 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJ
DV		REVISED PER TDRR 37155		30 DEC 68	APS J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	JK
DY		REVISED PER TDRR 37788		3 SEP 69	JJJ
DZ		REVISED PER TDRR 37810		24 SEP 69	M.G.
EA		REVISED PER TDRR 37838		3 OCT 69	JJJ RWH
EB		REVISED PER TDRR 38074		5 MAR 70	BW
EC		REVISED PER TDRR 38243		15 SEP 70	PHG CP
ED		REVISED PER TDRR 38331		10 FEB 71	REB CP

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU			2018601-201	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		IMU & PEA ASSY			2007203-101			
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28 VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607,609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222 (211, 212 AND 214 ARE TO BE RETROFITTED ONLY IF THE EYEPIECE RETAINER FAILS)
94.0	COMPUTER AIDED OPTICS TRACKING	G&N INDICATOR CONTROL PANEL ASSEMBLY		ECP 792	2021290-041	8102791	2021290-051	205, 213 & SUBSEQUENT PLUS 2 SPARES
					2021290-031	8102792	2021290-061	
95.0	REVERSE BIAS CORRECTION CAPACITOR C9 P/N 1006789-002 TO BE DISABLED IN THE POWER SUPPLY -28 VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 2007093-081 OR 2007093-091.	POWER AND SERVO ASSEMBLY	N/A	ECP 796	2007200-151	8102795	2007200-161	G&N 205, 213 THRU 222 & 3 SPARE PSA (G&N 214 THRU 220 ARE TO BE RETROFITTED ONLY IF UNIT IS RETURNED FOR REPAIR).
95.1		POWER SUPPLY -28VDC	N/A	ECP 796	2007107-011		2007107-021	
95.2		HEADER ASSEMBLY	N/A	ECP 796	2007093-081	8102794	2007093-101	1 SPARE
96.0	MODIFY OUA WITH NEW LUBRICANT FOR BEARINGS AND GEARS AND NEW LIGHT ROD ASSEMBLY.	OPTICAL UNIT AND BELLOWS ASSEMBLY	N/A	ECP 1013	2010790-181	N/A	2010790-191	APOLLO 17 AND SUBSEQUENT
97.0	REPLACEMENT OF BLOWER MOTORS	OUTER AXIS ASSY	N/A	ECP 1017	2018602-051	8102796	2018602-081	13 KITS TOTAL
		IMU			2018601-221 2018601-231		2018601-241 2018601-251	
		IMU & PTA ASSY			6007001-121		6007001-131	
		IMU & PEA ASSY			2007203-111		2007203-121	

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NEXT ASSY	USED ON
APPLICATION	

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE –
SHEET 14 OF 14

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
1.0	ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT	SEXTANT HAND CONTROLLER	1021245	MA-52	1014558-011	1021203	1014558-011	1, 2 & 3
2.0	ADDITION OF SIGNAL CONDITIONER POWER SUPPLY	—	—	ECP-25	—	8102602	—	—
2.1		POWER & SERVO ASSY	0102600	↕	1007100	8102601	1007257-011	G & N 6
2.2		POWER & SERVO ASSY	0102600	↕	1021207-011	8102600	1007257-031	G & N 20
2.3		POWER & SERVO ASSY	0102600	ECP-25	1007400-011	8102600	1007257-041	G & N 17, 12
3.0	MOISTURE PROOFING G & N 20	—	0102601	ECP-20	—	8102613	—	G & N 20
3.1		COUPLING DISPLAY UNIT		↕	1015500-011	8102608	1015500-021	39, 44, 45, 46, 47
3.2		D & C GROUP		↕	1014513-011	8102604	1014513-021	S/N 6
3.3		OPTICAL UNIT ASSY	0102601	ECP-20	1011000-002	8102615	1011000-002 MOD 1	S/N 9
4.0	CHANGE TO TEFLON AND MILENE WIRE	—	0102603	ECP-63	—	8102611	—	G & N 20
4.1		G&N HARNESS & END CONNECTOR		↕	1014606-011	8102607	1014606-031	SPARE
4.2		G&N INDICATOR CONTROL PANEL ASSY		↕	1014578-021	8102606	1014578-041	SPARE
4.3		IMU CONTROL PANEL ASSY	0102603	ECP-63	1014526-011	8102605	1014526-031	SPARE
5.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY	—	0102609	ECP-130	—	8102622	—	—
5.1		NAV. BASE & OPTICAL UNIT ASSY		↕	—		1899950-031	G & N 8
5.2				↕	—		1899950-041	G & N 20
5.3				ECP-130	—		1899950-051	G & N 17, 12
6.0	CHANGE FROM 40 TO 100 SEC. TIME DELAY	D & C ELECTRONICS	0102607	ECP-137	1015065-011	8102620	1015065-031	G & N 17, 12
7.0	MOISTURE SEALING	COUPLING DISPLAY ASSY	0102620	ECP-267	1016903-031	8102637	1021304-011	G&N 110,111,121 THRU 124+SERIES 100 SP
8.0	BLOWER MOTOR RESISTOR	IMU	0102627	ECP-232	1001500-011	8102621	1001500-041	G & N 17, 12, 50 SPARE
					1001500-021		1001500-051	G & N 109, 110, 111
					1001500-031		1001500-061	G&N 121 THRU 124, 100 SPARE
9.0	RETROFIT KIT FOR ECP 165	IMU CONTROL PANEL ASSY	0102613	ECP-165	1015095-011	8102627	1014628-011	12 SPARE
10.0	RETROFIT KIT FOR ECP 246	D & C ELECTRONICS ASSY	0102612	ECP-246	1015065-031 1015065-041	8102626 8102626	1015065-051 1015065-061	17, 12, 110 THRU 124
11.0	ADD SOLID PIN IN CAM & KNOB	G&N INDICATOR CONTROL PANEL ASSY	0102615	ECP-240	1015048-011	8102629	1015048-031	12, SPARE 110 THRU 124, SPARE
12.0	G & N 17 QUAL. RETROFITS	G & N SYSTEM	0102630	ECP-251	—	8102648	—	17
12.1		CDU FRAMES & PANEL ASSY	0102621	ECP-251	1016903-021	8102645	1016903-051	
12.2		POWER & SERVO ASSY	0102616	ECP-251,84R	1007257-041	8102631	1007257-051	
13.0	REPLACE PANEL MOUNTING SCREWS	G & N SYS.		ECP-265		8102644		
13.1		G & N IND. CONTROL PANEL	0102625	ECP-169-265 & 277	1015053-011	8102643	1015053-021	G&N 12 "50" SPARE
13.2		G & N IND. CONTROL PANEL	0102623	ECP-169 & 265	1014644-011	8102638	1014664-021	110,111,121 THRU 124 "100" SPARES G & N 12
13.3		IMU CONTROL PANEL	0102623	ECP-265	1014628-011	8102639	1014628-021	"50"SP 110,111,121 THRU 124 "100" SPARES G & N 12
13.4		OPTICS SHROUD	0102623	ECP-265	1014502-011	8102642	1014502-021	"50"SP 110,111,121 THRU 124,100 SPARES
13.5		D & C ELECTRONICS	0102623	ECP-265	1015065-051	8102640	1015065-081	G & N 12
					↕ -051		↕ -081	"50" SPARE
					↕ -071		↕ -101	G & N 110
					1015065-061		1015065-091	G&N 111,121 THRU 124 & "100" SPARES

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO.	DATE	APP'D
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	[illegible] 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ELP RW
	CF	REVISED PER TDRR 34806	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	WJM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		1 JAN 68	H.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CP	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	EP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RLP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGE		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		6 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14 APR -71	B. J.E.G.

NEXT ASSY	USED ON
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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
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MASTER RETROFIT KIT LIST
APPOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 1 OF 15

EE 1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
14.0	ADD HORIZONTAL HANDLES TO THE G&N INDICATOR CONTROL PANEL	G & N IND. CONTROL PANEL	0102625	ECP-277	SEE ITEM 13.1			G & N 12 "50" SPARE
15.0	BOLT PLATING CHANGED FROM CAD. TO NI.		0102610	ECP-211		8102624		
15.1		NAV. BASE & OPTICAL UNIT ASSY		↕	1899950-041		1899950-121	G & N 20
15.2					1899950-051		1899950-091	G & N 12 & SPARE
15.3					1899950-071		1899950-111	G & N 111, 109 & SPARE
15.4					1899950-061		1899950-131	G & N 121
15.5				ECP-211	1899950-081		1899950-141	G & N 122
16.0	BRIGHTNESS POT CAM REPLACEMENT	G&N INDICATOR CONDTROL PANEL ASSY	0102629	ECP-243	1014664-011	8102647	1014664-021	110,111,121 THRU 124 & SPARES
17.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 50.	G & N SYSTEM		ECP-169		8102630		
17.1		EYEPIECE STOWAGE	0102624	ECP-169		8102623	1021255-011	G & N 12 "50" SPARE G & N 20
17.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169,265 & 277	1015053-011	8102643	1015053-021	G & N 12 "50" SPARE
			0102622	ECP-169	1014578-041	8102641	1014578-041	G & N 20
18.0	ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM—BLOCK I SERIES 100	G & N SYSTEM		ECP-169		8102633		
18.1		EYEPIECE STOWAGE	0102624	ECP-169		8102632	1021255-021	G & N 110,111,121,122,123,124 "100" SPARES
18.2		G & N INDICATOR CONTROL PANEL	0102622	ECP-169 & 265	1014664-011	8102638	1014664-021	G & N 110,111,121,122,123,124 "100" SPARES
19.0	G & N QUAL RETROFITS	G & N SYSTEM		ECP-250,253, 84R,268,266		8102649		12
19.1		AGE HARNESS & END CONNECTOR ASSY	0102614		1015056-021	8102628	1015056-031	12
19.2		COUPLING DISPLAY ASSY	0102619		1016903-021	8102636	1021304-021	12
19.3		POWER & SERVO ASSY	0102617		1007257-041	8102634	1007257-061	12
19.4		IMU	0102617		1001500-041		1001500-071	12
20.0	MOISTURE SEAL & STRUCTURAL STRENGTH	AGE HARNESS & END CONNECTOR ASSY	0102626	ECP-225 & 270	1015086-000	8102646	1015086-011	121,122,123,124, SERIES 100 SPARES
21.0	NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTURE PROOF CONNECTOR WIRING A, TRAY 7		0102618	ECP-266,268, & 269		8102635		
21.1		PSA			1007570-011		1007570-021	100 SERIES
21.2		IMU			1001500-051		1001500-081	G & N 109, 110, 111
					1001500-061		1001500-091	121,122,123,124 SPARE
22.0	MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM	OPTICAL UNIT	0102635	ECP-328	1011000-006	8102657	1011000-006	G & N 20
23.0	DISABLE "TRACK" AND "TRACKER POWER" SWITCHES	G & N INDICATOR CONTROL PANEL ASSY	0102632	ECP-209	1014664-021	8102654	1014664-031	110,111,121,122,123,124, & SPARES
24.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-021	8102652	1015500-041	SPARES FOR G&N 12,SERIES 100
25.0	MOISTURE SEALING	CDU ASSEMBLY	0102620	ECP-267	1015500-031	8102653	1015500-051	SPARES FOR SERIES 100 OPTICS CDU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG NO	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	[illegible] NOV	
	CE	REVISION STATUS CHANGED	—	6 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	[illegible]	
	CG	REVISION STATUS CHANGED		30 NOV	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		JAN 68	J.N.
	CN	REVISION STATUS CHANGED		JAN 68	
	CP	REVISION STATUS CHANGED		27 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
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	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		8 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	MG
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14 APR 71	B. J.E.G.

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
2 PLACE DECIMALS + — − ; 3 PLACE DECIMALS + — − ; ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL ——
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE ——
SHEET 2 OF 15

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
26.0	MOISTURE PROOFING	PSA	0102628	ECP-206		8102650		
26.1					1007257-031		NO CHANGE	G & N 20
26.2					1007257-051			G & N 17
26.3					1007257-061			G & N 12
26.4					1007570-021			G & N 110 THRU 124
27.0	MOISTURE PROOFING		0102628	ECP-206		8102651		
27.1					1007257-031		NO CHANGE	G & N 20
27.2					1007257-051			G & N 17
27.3					1007257-061			G & N 12
27.4					1007570-021			G & N 110 THRU 124
27.5	MOISTURE PROOFING	TRACKER X & Y	0102628	ECP-206	1007585-011	8102651	NO CHANGE	G & N 110 THRU 124
28.0	1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL	AGE HARNESS AND PSA END CONNECTOR ASSY	0102633	ECP-225 & 270	1015086-000	8102655	1015086-021	G & N 110
29.0	GROUNDING OF GROUP SHIELDS	AGE HARNESS AND PSA END CONNECTOR ASSY	0102634	ECP-225	1015086-000	8102656	1015086-031	G & N 109
32.0	ADDITION OF LEM "B" HARNESS BRACKET TO IMU	—		ECP-306	—	—	—	—
32.3		INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY	0102636	ECP 306	6007001-021	8102658	6007001-041	G & N 603, 604 & SPARE
32.4		INERTIAL MEASURING UNIT ASSY	0102636	ECP-306	2018601-041	8102658	2018601-051	G & N 603, 604 & SPARE
33.0	PAINTING OF G&N BERYLLIUM SURFACES		0102611	ECP-219		8102625		
33.1		FRAME ASSY NAV BASE			1899982-000		1899982-011	G & N 12
33.2								50 SERIES SPARE
33.3								100 SERIES SPARE
33.4								G & N 121
33.5					1899982-000		1899982-011	G & N 122
33.6		OPTICAL UNIT ASSY			1011000-005		1011000-005	G & N 12
33.7					1011000-007		1011000-007	50 SERIES SPARE
33.8					2011000-001		2011000-001	G & N 121
33.9					2011000-021		2011000-022	G & N 122
33.10					2011000-021		2011000-022	100 SERIES SPARE
33.11		PSA TOE CAP			1008535		1008535	G & N 12
33.12					1008535		1008535	G & N 121
33.13					1008535		1008535	G & N 122, 123, 124
33.14		NAV BASE & OPTICAL UNIT ASSY			1899950-091		1899950-091	G & N 12
33.15					-161		-161	50 SERIES SPARE
33.16					-141		-151	100 SERIES SPARE
33.17					-131		-131	G & N 121
33.18			0102611	ECP-219	1899950-141	8102625	1899950-151	G & N 122

REVISIONS

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	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	DSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
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	DR	REVISION STATUS CHANGED		22-JUL 68	
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	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14 APR 71	B. J.E.G.

1021200

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MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL M. MURLER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 3 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
34.0	MOISTURE PROOFING	PSA, FRAMES NO. 1-4	0102637	ECP-269	1007531-011	8102659	1007531-031	SPARES
					1007532-011		1007532-031	
					1007533-011		1007533-031	
					1007534-011		1007534-031	
34.1	MOISTURE PROOFING	PSA, FRAMES NO. 5-10	0102637	ECP-269	1007535-011	8102660	1007535-031	SPARES
					1007536-011		1007536-031	
					1007537-011		1007537-031	
					1007538-011		1007538-031	
					1007539-011		1007539-031	
					1007530-011		1007530-031	
34.2	MOISTURE PROOFING	IMU	0102638	ECP-269	1001500-061	8102661	1001500-091	SPARES
34.3	MOISTURE PROOFING	PSA MODULES	0102638	ECP-269	1007507-011	8102662	1007507-041	SPARES
					1007218-011		1007218-021	
					1007401-011		1007401-021	
					1007402-011		1007402-021	
					1007412-011		1007412-021	
					1007426-011		1007426-021	
					1007427-011		1007427-021	
					1007437-011		1007437-021	
					1007462-011		1007462-021	
					1007480-011		1007480-021	
					1007481-011		1007481-021	
					1007482-011		1007482-021	
					1007483-011		1007483-021	
					1007484-011		1007484-021	
					1007485-011		1007485-021	
					1007486-011		1007486-031	
					1007487-011		1007487-021	
					1007488-011		1007488-021	
					1007507-021		1007507-031	
					1007510-011		1007510-021	
					1007516-011		1007516-021	
					1007517-011		1007517-021	
					1007511-011		1007511-021	
					1007414-011		1007414-021	
					1007549-011		1007549-041	
					1007518-011		1007518-041	
					1007518-021		1007518-031	
					1007519-011		1007519-021	
					1007522-011		1007522-021	
					1007523-011		1007523-021	
					1007524-011		1007524-021	
					1007525-011		1007525-021	
					1007526-011		1007526-021	
					1007527-011		1007527-021	
					1007528-011		1007528-021	
					1007540-011		1007540-041	
					1007540-021		1007540-031	
					1007541-011		1007541-041	
					1007541-021		1007541-031	
					1007542-011		1007542-021	
					1007543-011		1007543-041	
					1007543-021		1007543-031	
					1007544-011		1007544-021	
					1007545-011		1007545-041	
					1007545-021		1007545-031	
					1007546-011		1007546-021	
					1007547-011		1007547-021	
					1007549-021		1007549-031	
					1007551-011		1007551-021	
					1007552-011		1007552-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED	—	30 NOV 67	WSM
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	EE	REVISED PER TDRR 38391		14 APR -71	B. J.E.G.

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DRAWN W.S. MUELLER DATE 27OCT67
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HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021200
SCALE
SHEET 4 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
					1007554-011		1007554-021	
					1007555-011		1007555-021	
					1007556-011		1007556-021	
					1007557-011		1007557-021	
					1007558-011		1007558-021	
					1007561-011		1007561-021	
					1007563-011		1007563-021	
					1007564-011		1007564-021	
					1007567-011		1007567-021	
					1007581-011		1007581-021	
					1007590-021		1007590-031	
					1007591-011		1007591-021	
					1007651-011		1007651-021	
					1001598-021		1001598-041	
					1007509-021		1007509-031	
					1001599-011		1001599-031	
					1007521-011		1007521-041	
					1007550-011		1007550-051	
					1007550-021		1007550-061	
					1007550-031		1007550-071	
					1007550-041		1007550-081	
35.0	REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE	—	—	ECP-248	—	—	—	—
35.1		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102640	ECP-248	2010747-021	8102663	2010747-031	602
35.2		PULSE TORQUE AND THERMOCOUPLE ASSY	0102640	ECP-248	6010656-011	8102663	6010656-021	602
35.3		IMU & PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007001-061	8102663	6007001-051	603,604,605,606 & SPARE
35.4		PULSE TORQUE ASSEMBLY	0102640	ECP-248	6007000-051	8102663	6007000-041	603,604,605,606 & SPARE
35.5		POWER, SERVO & TC ASSY, C/M	0102639	ECP-248	2010743-011	8102664	2010743-021	202
35.6		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-061	8102664	2007200-051	203,204 AND SPARE
35.7		POWER AND SERVO ASSEMBLY, C/M	0102639	ECP-248	2007200-071	8102664	2007200-081	G& N 203, 204 & SPARE NO. I
36.0	ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT		0102647	ECP-407				
36.1		STOWAGE UNIT EYEPIECE	↑	↑	1021255-011	8102672	1021255-031	G & N 12, 20
36.2		STOWAGE UNIT EYEPIECE	↓	↓	1021255-021	8102673	1021255-041	G & N 110, 121, 122, 123, 124, 111
36.3		CASE-EYEPIECE STOWAGE	0102647	ECP-407	1021314-000	8102679	1021314-011	SPARE
37.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50")		0102653	ECP-426		8102682		
37.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	↑	↑	1899950-051	↑	1899950-251	G & N 17
37.2			↓	↓	1899950-221	↓	1899950-261	G & N 20
37.3			0102653	ECP-426	1899950-231	8102682	1899950-271	G & N 12
38.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100")		0102654	ECP-427		8102680		
38.1		NAVIGATION BASE & OPTICAL UNIT ASSEMBLY	0102654	↑	1899950-171	8102680	1899950-281	G & N 111
38.2			0102654		1899950-211	8102680	1899950-291	G & N 121
38.3			0102662	↓	1899950-191	8102691	1899950-311	G & N 123
38.4			0102662	ECP-427	1899950-211	8102708	1899950-321	G & N 122

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	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ V.M.
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14-APR-71	B. J.E.G.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — ; 3 PLACE DECIMALS + — ; ANGLES + —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 Oct 67
CHECKED 3 Nov 67
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G & N (A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 5 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
39.0	CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY		0102646	ECP-290		8102671		
39.1		NAV BASE & OPTICAL UNIT ASSY	↑	↑		↑	1899950-171	G & N 109, 111
39.2							1899950-181	G & N 121
39.3							1899950-191	G & N 123
39.4							1899950-211	G & N 122 100 SPARE
39.5							1899950-221	G & N 20
39.6			↓	↓		↓	1899950-231	G & N 12
39.7			0102646	ECP-290		8102671	1899950-241	G & N 50 SPARE
40.0	ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE	OPTICS COVER ASSY	0102656	ECP-423	1014532	8102683	1023080-011	12,121,122, 123, 124
41.0	REPLACEMENT OF IMU MOUNTING BOLTS	G & N SYSTEM		ECP-359				
41.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102643	ECP-359	2899950-011	8102668	2899950-031	G&N 201,202,203,204,205,206
41.2		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899950-031	8102685	6899950-021	G & N 601, 602
41.3		NAV. BASE ASSEMBLY - LEM	0102643	ECP-359	6899980-031	8102684	6899980-021	G & N 603,604,605,606
42.0	ADD METAL BELLOWS TO BLOCK II	G & N SYSTEM		ECP-373		8102667		
42.1		NAV. BASE & OPTICAL UNIT INST. KIT	0102642	ECP-373	2899950-031	8102667	2899950-021	G & N 202,204,205,206
					*2011000-035		*2010790-011	
					*2011000-034		*2010790-021	
					*2011000-034		*2010790-021	
					*2011000-041		*2010790-031	
42.2		*THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790.						
				ECP-388				
43.0	CORROSION PROTECTION							
43.1		POWER & SERVO ASSEMBLY (C/M)	0102649	↑	2007200-031	8102675	2007200-061	G & N 203 & SPARE NO. 1
43.2		COUPLING DATA UNIT (C/M)	0102650		2007222-031	8102676	2007222-071	G & N 203
43.3		INTERIAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY	0102651		6007001-041	8102677	6007001-061	G&N 603,604 & SPARE NO. 1
43.4		INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY	0102648		2007203-021	8102674	2007203-041	G & N 203
43.5		COUPLING DATA UNIT	0102650		2007222-061	8102676	2007222-081	G & N 603,604, & SPARE NO. 1
43.6		POWER & SERVO ASSEMBLY (LEM)	0102652		6007200-021	8102678	6007200-041	G & N 603,604 & SPARE NO. 1
43.7		G&N INTERCONNECT HARNESS GROUP	0102644		2014567-021	8102669	2014567-031	G & N 202,203 & SPARE NO. 1
		C/M BLOCK II						
43.8		G&N INTERCONNECT HARNESS GROUP LEM	0102645	↓	6014515-011	8102670	6014515-021	G & N 603 & 604
43.9		COUPLING DATA UNIT C/M	0102650	ECP-388	2007222-051	8102676	2007222-091	C/M SPARE NO. 1
43.10		POWER,SERVO & TC ASSEMBLY (C/M)	0102649	ECP-388 & 529	2010743-021	8102675	2010743-041	G & N 202
43.11		COUPLING DATA TC UNIT (C/M)	0102650	ECP-388	2010744-011	8102676	2010744-031	G & N 202
43.12		IMU & ASSOCIATED ELECTRONICS TC ASSY	0102648	ECP-388	2010747-011	8102674	2010747-041	G & N 202
44.0	REPLACEMENT OF COVER SPRING IN THE ESU	G & N SYSTEM		ECP-456				
44.1		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-031	8102693	1021255-051	G & N 12
44.2		STOWAGE UNIT EYEPIECE	0102663	ECP-456	1021255-041	8102693	1021255-061	G & N 121,111,124
44.3		CASE EYEPIECE STOWAGE	0102663	ECP-456	1021314-011	8102693	1021314-021	SPARE
45.0	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-021	8102687	1007700-041	G & N 12
45.1	ADD 56 MFD CAP TO 2.5V BIAS	SIG. COND ASSY	0102659	ECP-438	1007700-031	8102687	1007700-051	G & N 121,122,123
45.2	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-021	8102687	1007670-041	G & N 12, SPARE
45.3	ADD 56 MFD CAP TO 2.5V BIAS	FRAME ASSY	0102659	ECP-438	1007670-031	8102687	1007670-051	G&N 121,122,123 SPARE

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RP RWH
	CF	REVISED PER TDRR 34906		15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	RP
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	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
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	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14-APR-71	B. J.E.G.

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2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 6 OF 15

1021200

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
46.0	ADDITION OF GROUND STRAP	NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899950-011	8102701	6899950-031	G & N 601 & 602
46.1		NAVIGATION BASE ASSY LEM	0102668	ECP-462	6899980-011	8102701	6899980-031	G & N 603 THRU 605
47.0	REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE			ECP-461				
47.1		GIMBAL SERVO AMPLIFIER ASSY	0102665	ECP-461	2007114-011	8102699	2007114-021	MODULE SPARE, G&N 203,204,603, 604,605 & SPARES
47.2		POWER & SERVO ASSEMBLY, C/M	0102666	ECP-461	2007200-051	8102696	2007200-081	G&N 203,204 & SPARE NO. 1
					2007200-061		2007200-071	
47.3		POWER & SERVO ASSEMBLY, LEM	0102666	ECP-461	6007200-041	8102696	6007200-051	G&N 603,604,605 SPARE NO. 1 & SPARE NO. 2
47.4		POWER,SERVO & THERMOCOUPLE ASSY, C/M	0102666	ECP-461	2010743-021	8102707	2010743-031	G & N 202
47.5		POWER, SERVO & THERMOCOUPLE ASSY, LEM	0102666	ECP-461	6010655-011	8102707	6010655-021	G & N 602
48.0	IMPROVMENT FOR CDU CONNECTOR MATING	COUPLING DISPLAY UNIT	0102658	ECP-429	1015500-041	8102686	1015500-071	G & N 12
					1015500-051		1015500-081	121,122,123
49.0	ADDITION OF EJECTABLE DUST COVERS		0102670			8102692		
49.1		APTPS	0102670	ECP-426		8102692	1021373-021	12
49.2		APTPS	0102670	ECP-427		8102692	1021373-031	121
50.0	RELAY REPLACEMENT	CDU RESOLVER LOADS ASSY	0102661	ECP-446	1007510-021	8102689	1007510-031	
50.1	TRAY 6 MODULE REPLACEMENT	CDU & POWER SUPPLY ELECT. ASSY	0102661	ECP-446	1007576-021	8102688	1007576-031	
50.2	TRAY 6 REPLACEMENT	PSA	0102661	ECP-446	1007570-021	8102688	1007570-031	
50.3	REPLACE RELAY & DIODE MODULE	CONTROL ELEC ASSY	0102660	ECP-446	1015064-021	8102690	1015064-031	
51.0	ADDITION OF PROTECTIVE COVERS FOR	G&N INDICATOR CONTROL PANEL ASSY	0102664	ECP-457	2014578-011	8102694	2014578-021	203 THRU 207 SPARES
51.1	BLOCK 2 SWITCH MECHANISMS	RETICLE BRIGHTNESS CONTROL ASSY	0102664	ECP-457	2014656-011	8102695	2014656-021	SPARES
52.0	ADDITION OF VIBRATION DAMPER PLATE & PREVENTION OF READ LOOP OSCILATION			ECP-499 & 515				
52.1		COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-515	2010744-031	8102721	2010744-051	G & N 202
				ECP-499 ECP-515	2007222-071	8102712 8102718	2007222-101	G & N 203 & 204
				ECP-499 ECP-515	2007222-091	8102712 8102718	2007222-161	G & N 205 & 2 SPARES
				ECP-515	2007222-111	8102723	2007222-161	G & N 207
				ECP-499	2007222-081	8102712	2007222-121	G & N 604
				ECP-499 ECP-515	2007222-081	8102712 8102719	2007222-131	G & N 603,605,606 & 2 SPARES
				ECP-515	2010744-021	8102722	2010744-041	G & N 602
52.2		COARSE SYSTEM ASSEMBLY	N/A	ECP-515	2007236-011	8102720	2007236-031	
53.0	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSY	0102673	ECP-0428	2010790-021	8102704	2010790-061	G & N 204 & 205
			0102673	ECP-0428	2010790-031	8102704	2010790-071	G & N 206
			0102673	ECP-0428	2010790-091	8102704	2010790-111	G & N 208
			0102673	ECP-0428	2010790-141	8102704	2010790-131	G & N 209 & 211

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	JJJ
	CE	REVISION STATUS CHANGED	—	10 Nov 67	RP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2-JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
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	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ RJP
	DH	REVISION STATUS CHANGED		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
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1021200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + — 3 PLACE DECIMALS + — ANGLES + —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W.S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL E. AUSTIN MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL		SCALE NONE SHEET 7 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
53.1	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSY	0102674	ECP-0428		8102705		G&N 204,205,206,208,209 & 211
			0102700	ECP-0428R2	1021373-031	8102779	1021373-061	G&N 202 (OUA S/N 23)
53.2	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II	0102675	ECP-0428	2015000	8102706	2015000	G & N 204, 205, 206, 208, 209 & 211
53.3	ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II)	OPTICAL UNIT & BELLOWS ASSEMBLY	0102654	ECP-0428	2010790-011	8102680	2010790-051	G & N 202 (OUA S/N13)
				ECP-0428R2		8102780	2010790-171	G & N 202 (OUA S/N 23)
54.1 54.2	CONFORMAL COAT WIRE TERMINALS & REPLACE PIP PREAMP	IMU AND PEA		ECP-500	2007203-041		2007203-061	203
					2007203-031		2007203-051	204 & 205
54.3	REPLACE PIP PREAMP	IMU AND PTA		ECP-500	6007001-051		6007001-071	603,605 & 606
54.4	CONFORMAL COAT WIRE TERMINALS AND	IMU	0102680	ECP-500	2018601-061	8102713	2018601-081	205, BLOCK II SPARE 2
54.5	REPLACE PIP PREAMP	IMU		ECP-500	2018601-021	8102716	2018601-091	203
54.6		IMU		ECP-500	2018601-061	8102716	2018601-081	204, BLOCK II SPARE 1
54.7	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102715	2018601-071	603,605, LEM SPARE 1
54.8	REPLACE CAPACITOR	PIP PREAMP		ECP-500	2007060-011	8102714	2021269-011	ALL MODULES S/N'S LOWER THAN 37 & 40 THRU 43
54.9	CHANGE IMU NAMEPLATE	IMU	0102681	ECP-500	2018601-051	8102717	2018601-071	606, LEM SPARE 2
54.10	CONFORMAL WIRE TERMINALS AND	IMU & PTA		ECP-500	6007001-051		6007001-071	604
54.11	REPLACE PIP PREAMP	IMU		ECP-500	2018601-051	8102716	2018601-071	604
54.12	CONFORMAL COAT WIRE TERMINALS	IMU		ECP-500	2018601-071	8102713	2018601-071	603,605,606,2 SPARES ACSK NO.12,21
55.0	REPLACE UNRELIABLE CAPACITOR	IMU	0102678	ECP-500	1001500-091	8102709	1001500-111	G&N 122,123 AND SPARE IMU'S S/N 7 AND 9
		PIP PREAMP		ECP-500	1008285-011	8102711	1008285-021	
56.0	ADDITION OF SEALANT TO CONNECTOR PLATES & SHORTENING OF HARNESS MOUNTING SCREWS			ECP-529				
56.1		POWER & SERVO ASSEMBLY C/M	0102683	ECP-529	2007200-081	8102725	2007200-111	203 THRU 205 & 2 SPARES
56.2		G&N INTERCONNECT HARNESS GROUP (C/M BLK II)	0102682	ECP-529	2014567-031	8102724	2014567-041	202 THRU 206 & 2 SPARES
58.0	REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASSY		0102685	ECP-561				
		NAV. BASE & OUA ASSY			1899950-321	8102728	1899950-331	G & N 122
		NAV. BASE & OUA ASSY			1899950-311		1899950-341	G & N 123
		COOLANT HOSE BYPASS ASSY			1021407		1021407-011	SPARE
59.0	PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT	G&N INDICATOR CONTROL PANEL ASSY		ECP-538	2014578-021	8102729	2014578-031	204 THRU 208 & 1 SPARE
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-011		6014512-031	603 & 605
		COMPUTER CONTROL & RETICLE DIMMER ASSY			6014512-021		6014512-041	606 & 607

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	REPLACES REV CB WITHOUT CHANGE PER TDRR 34854		27 OCT 67	
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISED PER TDRR 35402		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4 JUN 68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISED PER TDRR 36540		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22 JUL 68	
	DS	REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14 APR 71	B. J.E.G.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(A C ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 8 OF 15

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. TO BE MODIFIED	RFK NO.	NEW P/N
60.0	REPLACEMENT OF FLAMMABLE MATERIALS	G & N INDICATOR CONTROL PANEL	202		ECP-569, 551 & 612	2014578-011 2014656-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021321 2021349
			204		ECP 569, 551 & 597	2014578-031 2014656-031 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102736	2021323-011 2014656-041 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943 007 1008943-008 1008943-010 2021321 2021349
60.0	REPLACEMENT OF FLAMMABLE MATERIALS & HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES	G & N INDICATOR CONTROL PANEL	205 THRU 209		ECP 569 & 551	2014578-031 2014656-031 2014764-011 1010999-1 1010999-3 1010999-4 1010999-5 1010999-6 1010999-7 1010999-8 1010999-10 2014622 2014626	8102730	2021290-011 2014656-041 2021301-011 1008943-001 1008943-003 1008943-004 1008943-005 1008943-006 1008943-007 1008943-008 1008943-010 2021309 2021310
60.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH ICD LIGHTING REQUIREMENT	G & N INDICATOR CONTROL PANEL	205, 206, 208, 209 & 215	0102699	569 R1	2021290-011	8102778	2021290-021
60.0	ADDITION OF STAR TRACKING CIRCUITRY	G & N INDICATOR CONTROL PANEL ASS'Y.	TWO (2) UNITS TO BE ASSIGNED BY NASA		ECP 569	2021290-041 2021309	8102737	2021290-031 2021419

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	WSM
	CD	REVISION STATUS CHANGED	—	7 NOV 67	
	CE	REVISION STATUS CHANGED	—	10 NOV 67	DLP RWH
	CF	REVISED PER TDRR 34906	—	15 NOV 67	JJJ
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISION STATUS CHANGED		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2 JAN 68	
	CM	REVISION STATUS CHANGED		11 JAN 68	AN.
	CN	REVISED PER TDRR 35145		19 JAN 68	
	CP	REVISION STATUS CHANGED		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ KSP
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		28 MAY 68	LK
	DL	REVISED PER TDRR 36240		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ VM
	DN	REVISED TDRR 36329		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14 APR -71	B. J.E.G.

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN W. S. MUELLER DATE 27 OCT 67 CHECKED APPROVAL CONTRACT NAS 9-497	MASTER RETROFIT KIT LIST APOLLO G & N (AC ELECTRONICS)
MATERIAL	A.C. METZGER NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021200
APPROVAL	E. AUSTIN MIT APPROVAL	SCALE NONE SHEET 9 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
61.0	INSTALL THERMAL SENSORS IN OUA	OPTICAL UNIT & BELLOWS ASSY	N/A	ECP-301 & 579	2010790-111	8102739	2010790-121	G & N 202
62.0	CUT PINS NO. 1 & NO. 9	2 SPEED SWITCH ASSY TRAY 8	0102684	ECP-555	1007522-021	8102727	1007522-031	G & N 122, 123, S/N 502, 503
62.1	REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSY	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	G & N 122 & 123
62.2	REPLACE 2 SPEED SWITCH ASSY WITH MODIFICATION	OPTICAL ELECTRONICS ASSY TRAY 8	0102684	ECP-555	1007578-021		1007578-031	502 & 503 (SPARE TRAYS)
62.3	REPLACE WITH MODIFIED TRAY 8 ASSY	PSA	0102684	ECP-555	1007570-021		1007570-041	501,G & N 123, 502,G & N 122
63.0	MSA & Q.R. MODULE, ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24	COUPLING DATA UNIT ASSY LEM	N/A	ECP-603				
63.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-031	
					2007238-021		2007238-041	
63.2				ECP-603	2007222-131	8102747	2007222-171	G & N 603
64.0	MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 & TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION)	COUPLING DATA UNIT ASSY C/M & LEM	N/A	ECP-603 & 609				
64.1		MSA & Q.R. MODULE			2007238-011	8102741	2007238-051,-071	SPARES & G&N MODULES
					2007238-021	8102748	2007238-061,-081	
64.2		COUPLING DATA UNIT ASSY C/M & LEM			2007222-131	8102744	2007222-221	605,606,607,608,609, & 3 SPARES
64.3					2007222-161	8102743	2007222-181	205,206,207,208,209 & 3 SPARES
64.4					2007222-101	8102743	2007222-191	203,204
64.5								
64.6				ECP-603 & 609				
65.0	REPLACE LACING TAPE. ADD ALUM FOIL TAPE	SIG. COND. ASSY C/M OPERATIONAL	N/A	ECP-623 & 551	2007234-011	8102731	2007234-021	G&N 205,206,207,208,209,210, (1) SPARE SIG. COND. ASS'Y AND (1) SPARE HEADER ASS'Y
65.1		HEADER ASSY SIG COND C/M OPERATIONAL	N/A		2007270-011		2007270-021	
65.2		WIRING HARNESS "A"			2014803		2021291	
65.3		SIG. COND.ASSY C/M FLIGHT QUAL.	N/A		2007235-011		2007235-021	G & N 202 & 204
65.4		HEADER ASSY SIG. COND. FLIGHT QUAL.	N/A		2007271-011		2007271-021	
65.5		WIRING HARNESS "A"	N/A	ECP-623 & 551	2014802	8102731	2021289	
66.0	ADD ALUM. FOIL TAPE	SIG. COND. ASSY LEM FLIGHT QUAL.	0102691	ECP-624	6007010-011	8102749	6007010-021	G & N 602,603,605,606 AND (1) SPARE HEADER ASS'Y
66.1		HEADER ASSY SIG. COND. LEM FLIGHT QUAL.	0102691		6007016-011		6007016-021	
66.2		SIG. COND. ASSY LEM OPERATIONAL	0102691		6007013-011		6007013-021	G&N 607,608,609, AND (1) SPARE SIG. COND. ASS'Y.
66.3		HEADER ASSY SIG. COND. OPERATIONAL	0102691	ECP-624	6007014-011	8102749	6007014-021	

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CC	THIS SHEET ADDED PER TDRR 34854		27 OCT 67	JSM
	CD	REVISION STATUS CHANGED	—	7 NOV	JJJ
	CE	REVISION STATUS CHANGED	—	10 NOV 67	ZP RWH
	CF	REVISED PER TDRR 34906	—	3 NOV 67	
	CG	REVISION STATUS CHANGED		30 NOV 67	JSM
	CH	REVISION STATUS CHANGED		13 DEC 67	JRK
	CJ	REVISION STATUS CHANGED		20 DEC 67	DL
	CK	REVISED PER TDRR 35098		28 DEC 67	MTY
	CL	REVISION STATUS CHANGED		2-JAN 68	MH
	CM	REVISION STATUS CHANGED		11 JAN 68	A.N.
	CN	REVISION STATUS CHANGED		19-JAN 68	MH
	CP	REVISED PER TDRR 35266		24 JAN 68	JRK
	CR	REVISION STATUS CHANGED		26 JAN 68	JRK
	CS	REVISION STATUS CHANGED		2 FEB 68	JRK
	CT	REVISION STATUS CHANGED		5 FEB 68	JRK
	CU	REVISION STATUS CHANGED		6 FEB 68	JRK
	CV	REVISION STATUS CHANGED		8 FEB 68	LK
	CW	REVISION STATUS CHANGED		14 FEB 68	ZP
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISION STATUS CHANGED		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		13 MAR 68	JJJ
	DF	REVISED PER TDRR 35791		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISION STATUS CHANGED		28 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	MH
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14 APR -71	B. J.E.G.

1021200

CC **THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27 OCT 67
CHECKED
APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 10 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
67.0	REMOVE ANTICREEP MODULE			ECP-590F &612				
67.1		POWER, SERVO & THERMOCOUPLE ASSY C/M	NONE	ECP-612	2010743-041	8102740	2010743-051	G & N 202
		POWER & SERVO ASSY C/M			2007200-101		2007200-131	
67.2		POWER & SERVO ASSY C/M	NONE	ECP-590	2007200-111	8102740	2007200-121	G & N 204,205,3 SPARES,206 & 207
68.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP (LEM)	0102692	ECP-626 & ECP-551	6014515-031	8102751	6014515-051	602
		G&N HARNESS B (LEM)			6010660		6010678	602,603 &(1) SPARE
		G&N HARNESS A (LEM)			6010670		6010677	602
69.0	ADDITION OF ALUMINUM FOIL TAPE & BETAGLAS LACING TAPE	G&N INTERCONNECT HARNESS GROUP	N/A	ECP-597, ECP-627 & ECP-551	2014567-041	8102742	2014567-061	204
		G & N HARNESS A			2010774		2021312	
		G & N HARNESS B			2021274		2021313	
		G & N HARNESS C			2021275		2021314	
		G & N HARNESS D			2021276		2021315	
		G & N HARNESS E			2021277		2021316	
		G & N HARNESS F			2021278		2021317	
		G & N HARNESS G			2021279		2021318	
		G & N HARNESS H			2021280		2021319	
		WIRING HARNESS K			2014767		2014767	
		G&N INTERCONNECT HARNESS GROUP		ECP-616 ECP-627 & ECP-551	2014567-041		2014567-061	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS A			2010774		2021312	202(S/N 9), 205 THRU 209 (1) SPARE
		G & N HARNESS B			2021274		2021313	202(S/N 2),205,207 THRU 209
		G & N HARNESS C			2021275		2021314	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS D			2021276		2021315	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS E			2021277		2021316	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS F			2021278		2021317	202(S/N 2),205 THRU 209 (1) SPARE
		G & N HARNESS G			2021279		2021318	202(S/N 2),205, 207 THRU 209
		G & N HARNESS H			2021280		2021319	202(S/N 2),205 THRU 209 (1) SPARE
70.0	CHANGE TO OVERLAYS WITH FILLED CHARACTERS TO APPROACH LIGHTING REQUIREMENT	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102698	594 RI	6014512-061	8102777	6014512-081	606 (S/N 8)
					6014512-061	8102776	6014512-081	605, 607 THRU 611 SP(S/N 7), SP(S/N 13)
70.0	TO REPLACE AND/OR PROTECT FLAMMABLE MATERIAL	COMPUTER CONTROL AND RETICLE DIMMER ASSY	0102695 N/A	ECP-551 & ECP-594	6014512-011	8102764	6014512-071	602
					6014512-031	8102738	6014512-051	605 & SPARE
					6014512-041	8102735	6014512-061	606 THRU 609 & SPARE
71.0	REPLACE CAPACITOR	PIP RREAMP		ECP-585	2021269-011	8102732	2021269-021	12 UNITS
		PIP PREAMP			2007060-011	8102732	2021269-021	
71.1	REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-605 & ECP-587	2018601-071	8102733	2018601-111	13(603),6(605),15(606),21(LEM SPARE), 19(609)
		IMU & PTA			6007001-071	8102757	6007001-081	(603),(605),(606),(LEM SPARE),(609)
		IMU			2018601-081	8102733	2018601-121	9(BLK II SPARE),10(207),14(205), 17(204),20(208),22(206)
		IMU & PEA			2007203-051	8102757	2007203-071	(BLK II SPARE),(207),(205),(204), (208),(206)
71.2	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED ASSEMBLIES.	IMU		ECP-585, ECP-605 & ECP-587	2018601-071	8102734 FOR A4 & A5 POSITION	2018601-111	11(607),12 (LEM SPARE)
		IMU & PTA			6007001-071		6007001-081	(607), (LEM SPARE)
		IMU			2018601-081		2018601-121	8(BLK II SPARE)
		IMU & PEA			2007203-051		2007203-071	(BLK II SPARE)
		OUTER AXIS ASSY		ECP-585	2018602-031	8102762 (FOR A6 POSITION)	2018602-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		MIDDLE AXIS ASSY			2018603-031		2018603-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		INNER AXIS ASSY			2018604-031	8102757	2018604-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
		STABLE MEMBER ASSY			2018605-031		2018605-041	11(607),12(LEM SPARE),8(BLK II SPARE), 7(203)
71.3	REMOVE HOSE INSULATION	HOSE ASSY		ECP-605	2018821-011	NONE REQD	2018821-021	202,203,204,205,206,207,208,209,210
71.4	REPLACE IRIG END CAP ASSY	IRIG PREALIGNED ASSY		ECP-587	2021500-051	8102756	2021500-071	100 UNITS
71.5	REPLACE CAPACITOR	PIP PREAMP		ECP-585	2007060-011	8102761	2021269-031	5 UNITS
		PIP PREAMP			2021269-011		2021269-031	
		PIP PREAMP			2021269-021		2021269-031	42
71.6	REPLACE IRIG PREALIGNED ASSEMBLIES	IMU		ECP-587	2018601-121	8102757	2018601-121	23(209)
		IMU & PEA			2007203-071		2007203-071	209
71.7	REPLACE PIP PREAMPS, REMOVE INSULATION BLANKETS AND REPLACE IRIG PREALIGNED	IMU		ECP-585, ECP-587, & ECP-605	2018601-091	8102734 FOR A4 & A5 POSITION. 8102762 FOR A6 POS. 8102757	2018601-121	7(203)
		IMU & PEA			2007203-061		2007203-071	203

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	CV	REPLACES REV CU WITH CHG PER TDRR 35505		9 FEB 68	LK
	CW	REVISION STATUS CHANGED		[illegible] FEB 68	
	CY	REVISION STATUS CHANGED		20 FEB 68	LK
	CZ	REVISION STATUS CHANGED		28 FEB 68	JRK
	DA	REVISION STATUS CHANGED		4 MAR 68	JJJ
	DB	REVISED PER TDRR 35717		6 MAR 68	JRK
	DC	REVISION STATUS CHANGED		8 MAR 68	JJJ
	DD	REVISION STATUS CHANGED		12 MAR 68	JJJ
	DE	REVISION STATUS CHANGED		14 MAR 68	JJJ
	DF	REVISION STATUS CHANGED		15 MAR 68	JRK
	DG	REVISION STATUS CHANGED		29 APR 68	JJJ
	DH	REVISED PER TDRR 36153		6 MAY 68	JJJ
	DJ	REVISION STATUS CHANGED		20 MAY 68	LK RWH
	DK	REVISED PER TDRR 36239		29 MAY 68	LK
	DL	REVISION STATUS CHANGED		4-JUN-68	B.
	DM	REVISION STATUS CHANGED		13 JUN 68	JJJ
	DN	REVISION STATUS CHANGED		18 JUN 68	JJJ
	DP	REVISION STATUS CHANGED		18 JUL 68	SA RWH
	DR	REVISION STATUS CHANGED		22-JUL 68	M.G.
	DS	REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
	DT	REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
	DU	REVISION STATUS CHANGED		20 DEC 68	JJJ
	DV	REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
	DW	REVISION STATUS CHANGED		16 APR 69	
	DY	REVISION STATUS CHANGED		3 SEP 69	JJJ
	DZ	REVISION STATUS CHANGED		24 SEP 69	M.G.
	EA	REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
	EB	REVISION STATUS CHANGED		31 MAR 70	
	EC	REVISION STATUS CHANGED		15 SEP 70	PHG CP
	ED	REVISION STATUS CHANGED		10 FEB 71	REB CP
	EE	REVISED PER TDRR 38391		14-APR-71	B. J.E.G.

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W S MUELLER DATE 27 OCT 67
CHECKED MALINOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL A C METZGER
MIT APPROVAL E AUSTIN

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
A C ELECTRONICS

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 11 OF 15

ITEM NO.	DESCRIPTION	END ITEM	R.I.B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
72.0								
73.0	REPLACE SPRING & COLLET ASSY IN SEXTANT TRUNNION DRIVE TRAIN	OPTICAL UNIT AND BELLOWS ASSY	N/A	ECP-590	2010790-061	8102739	2010790-131	G&N 204 & 205
				ECP-453	2010790-071		2010790-131	G&N 206
				ECP-475	2010790-091		2010790-141	G&N 207
				ECP-507	2010790-111		2010790-131	G&N 208
74.0	*ADDITION OF DISC & SEAL OVER FILL & VENT HOLES IN NAV BASE*	*NAVIGATION BASE ASSY, BLOCK II*	0102688	ECP 630	2899982-011	8102750	2899982-031	G&N 202, 205 THRU 209
			0102688	ECP 630	2899982-021	8102750	2899982-041	G&N 204
75.0	ADDITION OF OPTICS SHROUD ASSY WHICH MEETS MSC-A-D-66-3		0102694	ECP 629				
75.1		OPTICS SHROUD ASSY	0102694	ECP 629	2014576-011	8102759	2021394-011	G&N 204 THRU 209
76.0	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER AND SERVO ASSY	0102689	ECP 621	2007200-121 2007093-061	8102755	2007200-141 2007093-081	G&N 204, THRU 209, (3) PSA SPARES AND (1) HEADER SPARE
76.1	NON-METALLIC MATERIALS FLAMMABILITY PROTECTION	POWER, SERVO AND THERMO-COUPLE ASSY	0102689	ECP 621	2010743-051	8102755	2010743-061	G&N 202
77.0	REPLACE CONNECTOR GASKETS	POWER AND SERVO ASSEMBLY C/M PSA	0102693	ECP 572	2007200-141	8102758	2007200-151	G&N 204, 205, 206, 208, 209, 3 SPARES AND 207
78.0	*NON-METALLIC MATERIALS FLAMMABILITY PROTECTION*							
78.1		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	0102696	ECP 582	2010744-041	8102765	2010744-081	G&N 602
78.2		*COUPLING DATA UNIT AND THERMOCOUPLE ASSEMBLY*	0102696	ECP 612	2010744-051	8102765	2010744-091	G&N 202
79.0	*RELOCATION OF CCRD ASSEMBLY MOUNTING PROVISIONS*	*COMPUTER CONTROL AND RETICLE DIMMER ASSEMBLY*		ECP 422	6014512-051	8102760	6014512-061	605 AND SPARE
80.0	*ADD VHF RANGING SIGNALS*	*G&N INTERCONNECT HARNESS GROUP (BLK II)*		ECP 667	2014567-061	8102769	2014567-071	205, 206 & 2 SPARES
		G&N I/C HARNESS "A"			2021312		2021406	
81.0	ADD ALUMINUM FOIL TAPE	INERTIAL MEASUREMENT UNIT AND PIPA ELECTRONICS ASSEMBLY	0102679	ECP 620	2007203-071	8102752	2007203-081	204, 205, 206, 207, 208, 209 AND 2 SPARE
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
82.0	REMOVAL OF IMU INSULATION BLANKETS AND ADDING OF ALUMINUM FOIL TAPE	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605 & ECP 620	2010747-041	8102733	2010747-051	202
		IMU AND THERMOCOUPLE ASSEMBLY		ECP 605	2018699-011	8102733	2018699-031	
		IMU ASSEMBLY			2018601-021		2018601-141	
		PEA AND THERMOCOUPLE ASSEMBLY	0102679	ECP 620	2010745-021	8102752	2010745-031	
		PIPA ELECTRONICS ASSEMBLY			2007201-021		2007201-031	
		HEADER ASSEMBLY			2007092-021		2007092-031	
83.0	REMOVAL OF IMU INSULATION BLANKETS	IMU AND ASSOCIATED ELECTRONICS THERMOCOUPLE ASSEMBLY		ECP 605	2010747-031	8102733	2010747-061	602
		IMU AND THERMOCOUPLE ASSEMBLY			2018699-021		2018699-041	
		INERTIAL MEASUREMENT UNIT			2018601-031		2018601-131	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
CF		THIS SHEET ADDED PER TDRR 34906		5 NOV 67	JJJ
CG		REVISED PER TDRR 34914		30 NOV 67	JSM
CH		*REVISED PER TDRR 34946*		13 NOV 67	JRK
CJ		REVISED PER TDRR 35054		20 DEC 67	D
CK		REVISION STATUS CHANGED		28 DEC 67	MTY
CL		REVISED PER TDRR 35117		2 JAN 68	
CM		REVISED PER TDRR 35128		11 JAN 68	L.N.
CN		REVISION STATUS CHANGED		19 JAN 68	
CP		*REVISION STATUS CHANGED*		24 JAN 68	JRK
CR		*REVISED PER TDRR 35269*		26 JAN 68	JRK
CS		*REVISION STATUS CHANGED*		2 FEB 68	JRK
CT		*REVISED PER TDRR 35498*		5 FEB 68	JRK
CU		*REVISED PER TDRR 35500*		6 FEB 68	JRK
CV		*REVISION STATUS CHANGED*		8 FEB 68	LK
CW		REVISED PER TDRR 35579		14 FEB 68	RP
CY		REVISED PER TDRR 35580		20 FEB 68	LK
CZ		*REVISION STATUS CHANGED*		28 FEB 68	JRK
DA		REVISION STATUS CHANGED		4 MAR 68	JJJ
DB		*REVISION STATUS CHANGED*		6 MAR 68	JRK
DC		REVISION STATUS CHANGED		8 MAR 68	JJJ
DD		REVISION STATUS CHANGED		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		*REVISION STATUS CHANGED*		15 MAR 68	JRK
DG		*REVISED PER TDRR 36131*		29 APR 68	JJJ RSP
DH		*REVISED PER TDRR 36153*		6 MAY 68	JJJ
DJ		REVISED PER TDRR 36227		20 MAY 68	LK RWH
DK		*REVISION STATUS CHANGED*		28 MAY 68	LK
DL		*REVISION STATUS CHANGED*		4-JUN-68	B.
DM		*REVISED PER TDRR 36314*		13 JUN 68	JJJ
DN		REVISION STATUS CHANGED		18 JUN 68	JJ
DP		REVISED PER TDRR 36540		18 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22 JUL 68	
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR 70	JW
EC		REVISION STATUS CHANGED		15 SEP 70	PHG. CP
ED		*REVISION STATUS CHANGED*		10 FEB 71	REB CF
EE		*REVISED PER TDRR 38391*		14-APR-71	B. J.E.G.

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APPLICATION

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GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. JANOWIAK DATE 15 NOV 67
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APPROVAL
CONTRACT NAS9-497
A.C. METZGER
NASA APPROVAL
E. AUSTIN
MIT APPROVAL

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SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE NONE
SHEET 12 OF 15

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
CZ		THIS SHEET ADDED PER TDRR 35582		28 FEB 68	JRK
DA		REVISED PER TDRR 35698		4 MAR 68	JJJ
DB		REVISION STATUS CHANGED		6 MAR 68	JRK
DC		REVISED PER TDRR 35736		8 MAR 68	JJJ
DD		REVISED PER TDRR 35743		12 MAR 68	JJJ
DE		REVISION STATUS CHANGED		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISED PER TDRR 36314		13 JUN 68	JJJ V.M.
DN		REVISION STATUS CHANGED		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		8 JUL 68	SA RWH
DR		REVISION STATUS CHANGED		22-JUL 68	m.g.
DS		REVISION STATUS CHANGED		1 AUG 68	JJJ J.E.G.
DT		REVISION STATUS CHANGED		5 NOV 68	JJJ J.E.G.
DU		REVISION STATUS CHANGED		20 DEC 68	JJJ
DV		REVISION STATUS CHANGED		30 DEC 68	AFS J.E.G.
DW		REVISION STATUS CHANGED		16 APR 69	
DY		REVISION STATUS CHANGED		3 SEP 69	JJJ V.M.
DZ		REVISION STATUS CHANGED		24 SEP 69	M.G.
EA		REVISION STATUS CHANGED		3 OCT 69	JJJ RWH
EB		REVISION STATUS CHANGED		31 MAR	
EC		REVISION STATUS CHANGED		15 SEP 70	PHG CP
ED		REVISION STATUS CHANGED		10 FEB 71	REB CP
EE		REVISED PER TDRR 38391		14-APR-71	B. J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
84.0	APPLY ALUM TAPE AND RTV 109 FOR FIREPROOFING	LEM PSA	N/A	622	6007200-051	8102754	6007200-071	603,605 THRU 609 ALL SPARES
84.1		PSA HEAD ASSY			6007103-021		6007103-031	
84.2		LEM PSA	0102690		6010655-021	8102766	6010655-031	602
84 3			0102690		6007200-051	8102771	6007200-051	608(INTERIM FIELD RETROFIT)
85.0	MODIFY TO BE COMPATIBLE TO MOD. EYEPIECES	ESU	–	632 R2	2021382-011	8102775	2021382-021	G&N 205
					2021381-011		2021443-011	
					2021361		2021439	
					2021352-011		2021352-021	
					2021353-011		2021353-021	
					2021354		2021438	
86.0	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018828	8102763	2021397	G&N 203 THRU 209 AND TWO BLOCK II SPARES G&N 605 THRU 609 AND TWO LEM SPARES
		STABLE MEMBER ASSEMBLY	–		2018605-041		2018605-051	
		INNER AXIS ASSEMBLY	–		2018604-041		2018604-051	
		MIDDLE AXIS ASSEMBLY	–		2018603-041		2018603-051	
		OUTER AXIS ASSEMBLY	–		2018602-041		2018602-051	
		IMU	–		2018601-121		2018601-161	(203), (207), (205), (204), (208), (206), (209) TWO BLOCK II SPARES
		IMU & PEA	–		2007203-081		2007203-091	204, 205, 206, 207, 208, 209, TWO SPARES
		IMU	–		2018601-111		2018601-151	(605), (607), (606), (609), (608), TWO LEM SPARES
		IMU & PTA	–		6007001-081		6007001-091	605, 606, 607, 609, TWO SPARES, 608
86.1	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	STABLE MEMBER ASSEMBLY	–	653	2018605-021	8102763	2018605-061	202
		INNER AXIS ASSEMBLY	–		2018604-021		2018604-061	
		MIDDLE AXIS ASSEMBLY	–		2018603-021		2018603-061	
		OUTER AXIS ASSEMBLY	–		2018602-021		2018602-061	
		IMU	–		2018601-141		2018601-181	
		IMU & THERMOCOUPLE ASS'Y	–		2018699-031		2018699-051	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASS'Y	–		2010747-051		2010747-071	
		WIRING HARNESS "A"	–		2018828		2021397	
86.2	CHANGE IMU WIRING FOR IRIG PREAMP EXCITATION	WIRING HARNESS "A"	–	653	2018796	8102763	2021401	602
		STABLE MEMBER ASSEMBLY	–		2018605-011		2018605-071	
		INNER AXIS ASSEMBLY	–		2018604-011		2018604-071	
		MIDDLE AXIS ASSEMBLY	–		2018603-011		2018603-071	
		OUTER AXIS ASSEMBLY	–		2018602-011		2018602-071	
		IMU	–		2018601-131		2018601-171	
		IMU & THERMOCOUPLE ASSY	–		2018699-041		2018699-061	
		IMU & ASSOC. ELECTRONICS THERMOCOUPLE ASSY.	–		2010747-061		2010747-081	
87.0	CEMENT CONNECTOR MOUNTING NUTS IN THE IRIG END CAP	25 IRIG	0102697	678	2021500-071	8102767	2021500-101	603
		IMU			2018601-111		2018601-211	
		IMU & PTA ASS'Y.			6007001-081		6007001-111	
		25 IRIG	–		2021500-071	8102770	2021500-081	(608), (605),
		IMU			2018601-151	8102768	2018601-191	(606), (609)
		IMU & PTA ASS'Y			6007001-091		6007001-101	(607) TWO LEM SPARES
		25 IRIG	–		2021500-071	8102770	2021500-081	203, 204, 205, 206, 207
		IMU			2018601-161	8102768	2018601-201	208, 209, TWO BLK II SPARES
		IMU & PEA ASSY			2007203-091		2007203-101	204, 205, 206, 207, 208, 209 TWO BLOCK II SPARES

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APPLICATION

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+___ +___ +___
–___ –___ –___
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED YALIKOWSKI 3 NOV 67
APPROVAL ________
CONTRACT NAS 9-497
A.C. METZGER
NASA APPROVAL R. MILLARD
MIT APPROVAL ________

MANNED
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MASTER RETROFIT KIT LIST
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SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 13 OF 15

1021200

MIL 1077C-K

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
DE		THIS SHEET ADDED PER TDRR 35752		13 MAR 68	JJJ
DF		REVISION STATUS CHANGED		15 MAR 68	JRK
DG		REVISION STATUS CHANGED		29 APR 68	JJJ
DH		REVISION STATUS CHANGED		6 MAY 68	JJJ
DJ		REVISION STATUS CHANGED		20 MAY 68	LK RWH
DK		REVISION STATUS CHANGED		28 MAY 68	LK
DL		REVISION STATUS CHANGED		4-JUN-68	B.
DM		REVISION STATUS CHANGED		13 JUN 68	JJJ
DN		REVISED PER TDRR 36329		18 JUN 68	JJJ
DP		REVISION STATUS CHANGED		18 JUL 68	SA RWH
DR		REVISED PER TDRR 36541		22-JUL 68	M.G.
DS		REVISED PER TDRR 36595		1 AUG 68	JJJ J.E.G.
DT		REVISED PER TDRR 36987		5 NOV 68	JJJ J.E.G.
DU		REVISED PER TDRR 37134		20 DEC 68	JJJ
DV		REVISED PER TDRR 37155		30 DEC 68	APS J.E.G.
DW		REVISED PER TDRR 37513		16 APR 69	JK
DY		REVISED PER TDRR 37788		3 SEP 69	JJJ
DZ		REVISED PER TDRR 37810		24 SEP 69	M.G.
EA		REVISED PER TDRR 37838		3 OCT 69	JJJ RWH
EB		REVISED PER TDRR 38074		31 MAR 70	
EC		REVISED PER TDRR 38243		15 SEP 70	PHG CP
ED		REVISED PER TDRR 38331		10 FEB 71	REB CP
EE		REVISED PER TDRR 38391		14 APR -71	B. J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	R. I. B. NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	P/N MOD. (REF)	RFK NO.	NEW P/N (REF)	S/N
88.0	ADD CAPACITOR TO IRIG END CAP ASSEMBLY	25 IRIG	—	ECP 688	2021500-081	8102774	2021500-111 2018601-231	203 THRU 210 AND TWO BLOCK II SPARES
		IMU IMU & PEA ASSY			2018601-201 2007203-101	8102773	2007203-111	204 THRU 210 AND TWO BLOCK II SPARES
		25 IRIG			2021500-081	8102774	2021500-111	605, 606, 607, 608, 609, 610, TWO LM SPARES
		IMU			2018601-191	8102773	2018601-221	
		IMU & PTA ASSY			6007001-101		6007001-121	
88.1		IMU	—	ECP 653 & 688	2018601-211	8102763	2018601-221	603
		IMU & PTA ASSY			6007001-111	8102773	6007001-121	
89.0	REIDENTIFICATION OF LAMP RETAINER PANELS AS GSE EQUIP	G&N INDICATOR CONTROL PANEL ASSY	0102702	ECP 725	2021323-011 2021334 2021335	8102785	2021323-021 2901628 2901629	204
					2021290-021 2021425 2021426	8102786	2021290-041 2901628 2901629	205, 206, 208 THRU 215
90.0	MODIFY SXT TRUNNION LIMIT STOP ASSY	OUA & BELLOWS ASSY	0102701	ECP 724	2010790-131	8102782	2010790-181	205, 210 THRU 217, 1 SPARE
91.0	REVERSE BIAS CORRECTION. CAPACITOR C9, P/N 1006789-002, TO BE DISABLED IN THE POWER SUPPLY -28VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 6007103-031	POWER AND SERVO ASSY (LEM)	N/A	ECP 757	6007200-071	8102787	6007200-081	G&N 605 THRU 618 AND 3 SPARES
91.1		POWER SUPPLY -28VDC MOD.	N/A	ECP 757	2007107-011	N/A	2007107-021	1 SPARE
91.2		HEADER ASSEMBLY	N/A	ECP 757	6007103-031	8102788	6007103-041	2 SPARES
92.0	REPLACEMENT OF MOUNTING BOLTS	COUPLING DATA UNIT ASSEMBLY (LM)	0102703	ECP 781	2007222-221 2007222-241	8102789	2007222-251 2007222-261	607, 609 THRU 618 AND 3 SPARES
93.0	ADDITION OF FINGER TAB AND REPLACEMENT OF SXT EYEPIECE RETAINER BRACKET	ESU	0102704	ECP 790	2021382-021	8102790	2021382-031	205, 211 THRU 222 (211, 212 AND 214 ARE TO BE RETROFITTED ONLY IF THE EYEPIECE RETAINER FAILS)
94.0	COMPUTER AIDED OPTICS TRACKING	G&N INDICATOR CONTROL PANEL ASSEMBLY		ECP 792	2021290-041 2021290-031	8102791 8102792	2021290-051 2021290-061	205, 213 & SUBSEQUENT PLUS 2 SPARES
95.0	REVERSE BIAS CORRECTION CAPACITOR C9 P/N 1006789-002 TO BE DISABLED IN THE POWER SUPPLY -28 VDC MODULE P/N 2007107-011. TWO CAPACITORS TO BE ADDED TO THE HEADER ASSEMBLY P/N 2007093-081 OR 2007093-091.	POWER AND SERVO ASSEMBLY	N/A	ECP 796	2007200-151	8102795	2007200-161	G&N 205, 213 THRU 222 & 3 SPARE PSA (G&N 214 THRU 220 ARE TO BE RETROFITTED ONLY IF UNIT IS RETURNED FOR REPAIR).
95.1		POWER SUPPLY -28VDC	N/A	ECP 796	2007107-011		2007107-021	
95.2		HEADER ASSEMBLY	N/A	ECP 796	2007093-081	8102794	2007093-101	1 SPARE
96.0	MODIFY OUA WITH NEW LUBRICANT FOR BEARINGS AND GEARS AND NEW LIGHT ROD ASSEMBLY.	OPTICAL UNIT AND BELLOWS ASSEMBLY	N/A	ECP 1013	2010790-181	N/A	2010790-191	APOLLO 17 AND SUBSEQUENT
97.0	*REPLACEMENT OF BLOWER MOTORS*	*OUTER AXIS ASSY*	*N/A*	*ECP 1017*	*2018602-051*	*8102796*	*2018602-081*	*13 KITS TOTAL*
		IMU			*2018601-221* *2018601-231*		*2018601-241* *2018601-251*	
		IMU & PTA ASSY			*6007001-121*		*6007001-131*	
		IMU & PEA ASSY			*2007203-111*		*2007203-121*	

DE THIS SHEET ADDED

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NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + __ − 3 PLACE DECIMALS + __ − ANGLES + __ −
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W. S. MUELLER DATE 27 OCT 67
CHECKED MALIKOWSKI 3 NOV 67
APPROVAL
CONTRACT NAS 9-497
AC METZGER
NASA APPROVAL R MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE −
SHEET 14 OF 15

EE 1021200

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
EE		THIS SHEET ADDED PER TDRR 38391		14-APR-71	B. J.E.G.

ITEM NO.	DESCRIPTION	END ITEM	RIB NO. (REF)	AUTHORIZATION ECP. NO. OR S.O.W.	PART NO. MOD. (REF.)	RFK NO.	NEW PART NO. (REF)	S/N
98.0	REPLACEMENT OF MODULES CONTAINING 1010274 TRANSFORMER	COUPLING DATA UNIT ASSEMBLY CM AND LM	N/A	ECP 1030	2007222-181	N/A	2007222-271	APOLLO 15 AND SUBSEQUENT (10 UNITS) PLUS 2 CM SPARES AND 2 LM SPARES
					2007222-231		2007222-281	
					2007222-251		2007222-291	
					2007222-261		2007222-301	

1021200

EE THIS SHEET ADDED

ND 1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

DELCO ELECTRONICS DIV
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN W.S. MUELLER DATE 27-OCT-71
CHECKED MALIKOWSKI 3-NOV-67
APPROVAL
CONTRACT NAS9-497
AC METZGER
NASA APPROVAL
R. MILLARD
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N
(DELCO ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021200
SCALE —
SHEET 15 OF 15

MIL 10770-K

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	~~1-8-65~~	
L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED			6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
AF		REVISION STATUS CHANGED	JC	RLW	26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——		——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES		——	——		——	8102133	——
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	——		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	——		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	——		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	——	——	NAS 9-497, SA42	——	8102100	——
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET, INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000002	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN F.P. Young 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E.A. Olson 11-3-65
APPROVED MIT A. C. METZGER 11/4/65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 3

1021201 AJ

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, ISS/OSS		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153	M.J.		21-JUL 66	
AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C.	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	S.S.	N.W.	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	28 MAR 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 3

1021201 AK

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N REFERENCE
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, 155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497, CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 22726	JJ	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ T		REVISED PER TDRR 26111	RLP	WS	18 FEB 66	
Ⓜ U		REVISED PER TDRR 26371	J.H.P	PZ	24 FEB 66	
Ⓜ V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Ⓜ Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ Z		REVISED PER TDRR 29232	JIMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
Ⓜ AC		REVISED PER TDRR 30153	M.G.		21-JUL 66	
Ⓜ AD		REVISED PER TDRR 31045	J.D.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
Ⓜ AJ		REVISED PER TDRR 32124	S.S.	N.W.	13 DEC 66	
AK		REVISED PER TDRR 33239	R.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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CAPACITOR VALUES ARE IN μf
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FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E.A. Olson 11-3-65
APPROVED MIT W. 3-14-65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 SIZE D DRAWING NO. 1021201

SCALE — SHEET 2 OF 3

1021201 AL

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——		——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-8	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	——	——	——		——	8102133	——
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	——		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	——		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	——		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	——	——	NAS 9-497, SA42	——	8102100	——
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION		CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
Ⓜ	L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
Ⓜ	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ	P		REVISION STATUS CHANGED	JM	PJ	21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD		17 FEB 66	
Ⓜ	T		REVISION STATUS CHANGED	RLP	JD	18 FEB 66	
Ⓜ	U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
Ⓜ	V		REVISION STATUS CHANGED	B.	CF	6-APR 66	
Ⓜ	W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Ⓜ	Y		REVISION STATUS CHANGED	RLF		24 MAY 66	
Ⓜ	Z		REVISION STATUS CHANGED	JIMO		7 JUN 66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
Ⓜ	AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
●	AC		REVISION STATUS CHANGED		J.M.	21 JUL 66	
Ⓜ	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
	AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
Ⓜ	AF		REVISION STATUS CHANGED	JC	RW	26 OCT 66	
	AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
	AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
	AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
Ⓜ	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
	AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	

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GENERAL MOTORS CORP MILWAUKEE WIS

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A. C. METZGER
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DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 | SIZE D | DRAWING NO. 1021201

SCALE —— | SHEET 1 OF 3

1021201 AM

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	R.
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		0ITS	3-5,7-9, 11-16,18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5,7-9, 11-16	0102117	NASA 9-497 SA42	2900713-011	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021

1021201 AM

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P.GRASSO DATE 10-28-65
CHECKED E.A.PULEK 11-2-65
APPROVAL E.A.OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C.METZGER
MIT APPROVAL 3NOV65 W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 3

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G&N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G&N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		900004-021	8102017	1900004-021
6.4.2		G&N COOLANT & POWER CONSOLE	10-14	0102013		900145-011	8102053	900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G&N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		900866-011	8102098	1901876-011
8.3						900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						900866-021	8102099	1901875-011
8.6						900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G&N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G&N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G&N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		902301-011	8102140	902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9,11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G&N COOLANT & POWER CONSOLE		0102041		902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7,9-14	0102055		902299-011	8102114	2900025-011
9.2		G&N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		900299-011	8102111	1900299-021
9.4		G&N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
Ⓜ	L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
Ⓜ	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ	P		REVISION STATUS CHANGED	JM		21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD		17 FEB 66	
Ⓜ	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
Ⓜ	U		REVISION STATUS CHANGED	JHP		24 FEB 66	
Ⓜ	V		REVISION STATUS CHANGED	JB.	CP	6-APR-66	
Ⓜ	W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Ⓜ	Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Ⓜ	Z		REVISION STATUS CHANGED	JIM		7 JUN 66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 3/4/65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 2

1021201 AA

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497,SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/C OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5,7-9, 11-16,18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		O'TS	3-5,7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13(SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5,7-9,11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
Ⓜ	L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ	M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ	P		REVISED PER TDRR 25338	JN		21 JAN 66	
	R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ	T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
Ⓜ	U		REVISED PER TDRR 26371	JHP		24 FEB 66	
	V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
Ⓜ	W		REVISED PER TDRR 28594	PWT		13 MAY 66	
Ⓜ	Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ	Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

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CAPACITOR VALUES ARE IN μf
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FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT
APPROVED MSC A C METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 AA

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES RE J WITH CHANGE ~~PER~~ TDRR 23726		CP	1-28-65	
L		REVISION STATUS CHANGED		CP	10 NOV 65	
M		REVISED PER TDRR 2443'	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		5 DEC 65	
P		REVISION STATUS CHANGED	JM		21 JAN 66	
R		REVISION STATUS CHANGED	RLP		15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JIMP		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	901895	900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		900145-011	8102053	900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		900866-011	8102098	1901876-011
8.3						900867-011	8102098	
8.4						1901663-011	8102098	
8.5						900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102093	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

		DATE
DRAWN	F. P.	10-28-65
CHECKED		
APPROVED		
APPROVED	E. A.	11-3-65
APPROVED MIT	W.	
APPROVED MSC		

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201
SCALE		SHEET 1 OF 2

1021201 AB

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	[illegible] CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2300072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021[illegible]	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RP		18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	RJT		13 MAY 66	
Y		REVISED PER TDRR 29000	RP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	JK	JAC	15 JUL 66	

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NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
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CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Towne 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE
SHEET 2 OF 2

1021201 AB

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP		15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

ND1000000	
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT 11-4-65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 2

1021201 AC

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	~~1-14~~	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE · TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RP		15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153	M.J.		21-JUL 66	

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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 2 OF 2

1021201 AC

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		900145-011	8102053	900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102059		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:
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REVISIONS

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	K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
(M)	L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
(M)	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
(M)	N		REVISED PER TDRR 24566	JHP		3 DEC 65	
(M)	P		REVISION STATUS CHANGED	JM	PJ	21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD		17 FEB 66	
(M)	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
(M)	U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
M	V		REVISION STATUS CHANGED	JB.	CP	6-APR-66	
(M)	W		REVISION STATUS CHANGED	R.W.T.		13 MAY 66	
(M)	Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
(M)	Z		REVISION STATUS CHANGED	JM		66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
(M)	AB		REVISION STATUS CHANGED	JK	JAC	15 JUL 66	
(M)	AC		REVISION STATUS CHANGED			21 JUL 66	
	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	

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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E.A. Olsen
APPROVED MIT 11-4-65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 2

1021201 AD

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK I/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102136	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK I/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP-269	1900805-011	8102244	1900805-021

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153	M.G.		21-JUL-66	
AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Keyser 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE —
SHEET 2 OF 2

1021201 AD

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALYZER	3-14	0102004		1900004-011	901894	900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	901895	900268-021
1.3	↓	GSE J-BOX OVERHEAD	3-14	0102002	↓	900433-011	901896	900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021253	NECP A-8	1900000-011	1021243	900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900269-021	8102050	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW		—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	190[illegible]4-0[illegible]
6.2		REMOTE OPTICS CONTROLLER	6-9	0102010		1900491-011	8102005	900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		900269-021	8102014	1900269-021
6.4.0	RETROFIT KIT LIST FOR OTS, PART OF NECP A-32	SEE BELOW				—	8102013	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	0-14	0102012		900145-011	8102053	900145-011
6.4.3	↓	INTERCONN. CABLE SET	3-12	0102009	↓	1901303-011	8102012	1901303-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102036	900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102023		9008[illegible]-011	8102093	1901876-011
8.3						9008[illegible]7-011	8102038	
8.4						1901663-011	8102033	↓
8.5						[illegible]	8102039	1901875-011
8.6						9008[illegible]7-021	8102039	
8.7						1901663-021	8102039	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900[illegible]-011	8102034	902311-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	900005-021	8102019	9023[illegible]-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	-5	0102022		901303	8102013	902299
8.11.3			-5	0102022		1900740	8102013	902299
8.11.4		PSA TEST POINT ADAPTER	2-3 5-14	0102015		1900931	8102044	901931-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		900145-011	8102040	190[illegible]34-011
8.11.6		GSE J-BOX OVERHEAD	3-[illegible]	0102014		900433-021	8102035	901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	900797-011	8102057	900797-021
8.13		AUXILIARY BATTERY PACK	-2	[illegible]	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP TEMP CONTROL		01021[illegible]	ECP-57	900342-011	8102062	900342-011
8.15		OPTICS NAV BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	902301-011
8.16	↓	G & N HARNESS HANDL & MOT FXT	-[illegible]	0102027	NECP A-31	901846-011	8102030	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES					—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		902204-011	8102135	1902204-0[illegible]
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		902246-011	8102136	902246-011
8.17.3		OPTICS NAV BASE MTG FIXTURE	2-9	0102057		902301-011	8102140	902301-011
8.17.4.0		OITS	3-17	—		902300-011	8102143	902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		901976-011	8102142	901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		901959-011	8102149	901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	AS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		902134-011	8102103	902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			900009-021	[illegible]	1900009-031
9.3		DEGAUSSER	1-6	0102031		900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102053		1902204-01	81021[illegible]	900067-021
9.5		[illegible] CONTAINER	1-14	0102047		900010-011	81021[illegible]	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	-9	0102046	↓	1902046-011	81021[illegible]	902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	R.N.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	JK	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
N0100000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE, WIS.

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED
APPROVED MIT
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE
SHEET 1 OF

1021201 AL

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS NAV BASE MTG FIXTURE	2-3	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933 011	8102137	1901933-021
10.2		I/50 CABLE W109	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP-269	1900805-011	8102244	1900805-021
	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP-359	2900000-011	8102263	2900000-021

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MCM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	JK	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153			21-JUL 66	
AD		REVISED PER TDRR 31045	SD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
N01000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
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TOLERANCES ON
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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE, WIS.

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED
APPROVED MIT W Kupfer
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 AE

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B NO (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901836	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	[illegible]		[illegible]	[illegible]	[illegible]
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—				—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM	PJ	21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T.		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	JK	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED	MG		21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	MB		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Young 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E.A. Olsen 11-3-65
APPROVED MIT 8 NOV 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 | SIZE D | DRAWING NO. 1021201
SCALE — | SHEET 1 OF 2

1021201 AF

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		,155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021[illegible]6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	J J	CP	11-3-65	
L		REVISED PER TDRR 23723	J J	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGN	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JIMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153	M.G.		21-JUL 66	
AD		REVISED PER TDRR 31045	J.D.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	

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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
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APPROVED C A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. M[illegible]ZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE —
SHEET 2 OF 2

1021201 AF

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CF	6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMP		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	S.S.	N.W.	13 DEC 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	PART TO BE MODIFIED (REFERENCE)	KIT NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15		[illegible]	
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-14	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102053	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102016	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	[illegible]	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	1-9	0102011	NECP A-32	[illegible]-011	8102016	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-6	0102010		[illegible]	8102005	[illegible]
6.3		GSE/PSA J-BOX	[illegible]	[illegible]		[illegible]	[illegible]	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW				—	[illegible]	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-031
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-[illegible]	8102023	1900145-011
6.4.3		INTERCONN. CABLE SET	[illegible]	0102009		1901308-011	[illegible]	[illegible]-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102102	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-19	0102024	NECP A-31	[illegible]	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102023		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901668-011	8102098	
8.5						[illegible]	[illegible]	1901875-011
8.6						1900867-021	8102099	
8.7						1901668-021	8102098	
8.9		PURGE & FILL [illegible]	[illegible]	[illegible]		[illegible]	[illegible]	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102086	1900606-021
8.11.0		OITS	3-17	0102028	NECP A-31	[illegible]-021	8102018	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1901740	8102015	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	[illegible]		[illegible]-011	8102043	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		[illegible]-011	8102046	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		[illegible]-021	[illegible]	1901959-011
8.12		SIMULATOR SET, LOAD & [illegible]		0102017		[illegible]	[illegible]	[illegible]-021
8.13		AUXILIARY BATTERY [illegible]	1-2	0102019	[illegible]	1901402-011	8102063	1901402-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102010	[illegible]	1900342-011	8102068	1900342-021
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	[illegible]	[illegible]-011	8102073	1902301-011
8.16		G & N HARNESS HAND. & INST. FIXT	1-6	0102027	[illegible]	[illegible]	[illegible]	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES		—	—		—	[illegible]	—
8.17.1		G & N MOUNTING FIXTURE	[illegible]	[illegible]		[illegible]	[illegible]	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-8	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3,5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA-2	—	[illegible]	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102044		1902134-011	8102108	1902134-021
9.1.3		CABLE SET, INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-8	0102046		1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
[illegible]	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 11/4/65
A. L. Metzger
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 2

1021201 AG

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.T.S. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED & REFERENCE	RTK. NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	[illegible]	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021265	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102016	ECP-121	1900009-011	8102073	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32			—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	1-8	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		[illegible]	[illegible]	[illegible]
6.3		GSE/PSA J-BOX	8-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—			—	8102016	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102005		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		[illegible]	[illegible]	[illegible]
6.4.3		INTERCONN. CABLE SET	8-12	0102008		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	9-16	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900860-011	8102095	1901876-011
8.3						1900867-011	8102096	
8.4						1901663-011	8102098	
8.5						1900806-021	8102088	1901875-011
8.6						1900867-021	81020[illegible]	
8.7						1901663-021	81020[illegible]	
8.9		PURGE & FILL FIXTURE	1-9	0102024		[illegible]-011	8102084	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102086	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102018	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901870-011
8.11.2		INTERCONN. CABLE SET	1-15	0102021		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102015	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102045	1901881-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	01020[illegible]		1900147-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	[illegible]	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		[illegible]	[illegible]	[illegible]-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-[illegible]	1901492-011	8102083	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-[illegible]	1900342-011	8102063	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102028	ECP-[illegible]	1900916-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST FIXT	1-4	0102029	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES		—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-8	0102050		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-8	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901876-011	8102142	1901876-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA12	—	[illegible]	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-8,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-8,11-16	0102043		1901876-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102044		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7,9-14	0102055		1902299-011	8102144	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102114	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102117	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-8	0102046		1902046-011	8102123	1902046-021

NOTES:
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REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
(M)	L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
(M)	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
(M)	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
(M)	P	—	REVISION STATUS CHANGED	JM		21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD		17 FEB 66	
(M)	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
(M)	U		REVISION STATUS CHANGED	JHP		24 FEB 66	
(M)	V		REVISION STATUS CHANGED	JB.	CP	6-APR-66	
(M)	W		REVISION STATUS CHANGED	R.WT		13 MAY 66	
(M)	Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
(M)	Z		REVISION STATUS CHANGED	JIMB		7 JUN 66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
(M)	AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
	AC		REVISION STATUS CHANGED			27 JUL 66	
(M)	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
	AE		REVISION STATUS CHANGED	ME		21 OCT 66	
(M)	AF		REVISION STATUS CHANGED	JC		26 OCT 66	
	AG		REVISION STATUS CHANGED	S.S.	N.W.	13 DEC 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-29-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson
APPROVED MIT W Kupfer
APPROVED MSC A.L. Metzger
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 | SIZE D | DRAWING NO. 1021201
SCALE | SHEET 1 OF 2

1021201 AG

ITEM NO	DESCRIPTION	END ITEM	S/N	KIT NO.	AUTHORIZATION	P/N TO BE MODIFIED	EPK NO.	NEW P/N (REFERENCE)
9.7	BLOCK I/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102044	NAS E-497, 3A42	1902301-011	8102135	2900072-011
9.8		HOSE SET, INTERCOMM G&N		0102048		1901876-011	8102136	
9.9		155/085		0102049		1901875-011	8102138	
9.10		ROTARY TABLE ASSY	1-11	[illegible]		1900920-011	[illegible]	[illegible]
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP 0093	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W 09)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	[illegible]	ECP [illegible]	1901146-021	[illegible]	1901846-021
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102062	ECP 0213	1900011-011	8102153	1900011-021
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW						
13.1		OITS	[illegible]	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102079		2900023-011	8102162	2900023-021
13.1.2		GDB		[illegible]				
13.1.3		G&N COOLANT & INTERCONSOLE		0102085		[illegible]	[illegible]	[illegible]
13.1.4		CABLE SET, INTERCONNECT		0101[illegible]0		2900025-011	8102173	2900025-[illegible]
13.2		CABLE ASSY, I-13 (SPEC. LEM)	1-13	0102082		[illegible]	[illegible]	[illegible]
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102083		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102070		[illegible]	[illegible]	[illegible]
13.5		COMP. MTG. PLATE	1-15	0102065		2900007-011	8102185	2900007-021
13.6		PSA/TPA	1-18	0102066		2900087-011	8102161	2900087-021
13.7		CABLE SET, INTERCONN	[illegible]	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12	[illegible]	BLOCK [illegible]	[illegible]	[illegible]	[illegible]
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-8	0102084	ECP [illegible]	1902431-011	[illegible]	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING INSTALLATION FIXTURE	[illegible]	0102085	ECP 29	1901846-011	8102182	1901846-021
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP [illegible]	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901938-021	8102246	1901938-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2 [illegible]		8102157	
18.1		OITS	1-5, 7-9, 11-16, 18-20	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		I-13 (SPEC. LEM) CABLE SET	1-11	0102081		[illegible]	[illegible]	[illegible]
18.6		(SPEC. BLK II)	1-16	0102101		2900712-021	[illegible]	2900712-031
18.7		CABLE SET, INTERCONNECT	[illegible]	0102102		2900713-021	8102212	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-16	0102086		2900064-011	8102194	2900064-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 4[illegible]	[illegible]	[illegible]	[illegible]
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 8	0102109	NAS-497	[illegible]01520	8102137	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-9	0102113	ECP [illegible]	1902431-0[illegible]	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	[illegible]	[illegible]	[illegible]	1902206-021
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP [illegible]	1900806-011	8102244	1900806-021
	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE	1-18	0102126	ECP [illegible]	[illegible]00100-011	[illegible]	2900020-021
TBA	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388 R1	2900938-011	8102267	2900938-021
	[illegible] E	PSA ADAPTER MODULE		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25558	JN		21-JAN-66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	
V		REVISED PER TDRR 27658	JB	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000			24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994.	RLOH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JRC	15 JUL 66	
AC		REVISED PER TDRR 30153			21-JUL-66	
AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31833	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.		13 DEC 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING

USED ON
APPLICATION

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN
CHECKED 11-3-65
APPROVED
APPROVED E A Olson
APPROVED MIT W K
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 A6

ITEM NO	DESCRIPTION	END ITEM	S/N	R.T.B. NO.	AUTHORIZATION	[illegible] MODIFIED [illegible]	RTK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-6	0102046	NAS 9-497, SA42	1902301-011	[illegible]	2900072-011
9.8		HOSE SET, INTERCONN G&N		0102048		1901876-011	8102136	
9.9		ISS/OSS		0102048		1901875-011	[illegible]	
9.10		ROTARY TABLE ASSY	1-11	[illegible]		1900920-011	[illegible]	[illegible]
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-02
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102080	ECP-75	1901846-021	[illegible]	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102066	ECP-0218	[illegible]	[illegible]	[illegible]
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	[illegible]	ECP-0218	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	[illegible]		[illegible]	
13.1		OITS	[illegible]	0102072		2900022-011	8102168	2900022-021
13.1.1		OIA		0102075		2900023-011	8102167	2900023-021
13.1.2		GDB		0102071		[illegible]	[illegible]	
13.1.3		G&N COOLANT [illegible]		[illegible]		[illegible]	[illegible]	[illegible]
13.1.4		CABLE SET, INTERCONNECT		010207[illegible]		2900025-011	8102170	2900025-0[illegible]
13.2		CABLE ASSY, I-13 (SPEC. LEM)	1-13	0102082		6900015-011	8102179	[illegible]
13.3		CABLE ASSY (SPEC. II K [illegible])	1-12	[illegible]		2900072-011	8102178	2900072-0[illegible]
13.4		SUBSYS. MTG. FIXTURE	1-18	0102078		2900070-011	8102184	2900070-0[illegible]
13.5		COMP. MTG. PLATE	1-13	0102080		2900017-011	8102135	290000[illegible]
13.6		PSA/TPA	1-10	0102064		2900287-011	[illegible]	2900087-0[illegible]
13.7		CABLE SET, INTERCONN.	[illegible]	01020[illegible]		2900715-011	[illegible]	2900715-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP ASSEMBLY	1-7, 10-12	0102068	BLOCK II	2900078-011	[illegible]	[illegible]
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	[illegible]	0102084	ECP [illegible]	1902431-011	[illegible]	1902431-[illegible]
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	[illegible]	[illegible]	ECP 170	[illegible]	[illegible]	[illegible]
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	[illegible]	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901938-021	8102240	1901938-031
18.0	GSE MARRIAGE KIT 2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-[illegible]		[illegible]	
18.1		OITS	[illegible]	0102107		[illegible]	[illegible]	2900022-031
18.2		CIA		0102106		2900023-021	[illegible]	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	[illegible]		[illegible]	[illegible]	[illegible]
18.6		(SPEC. [illegible])				[illegible]	[illegible]	2900712-031
18.7		CABLE SET, INTERCONNECT	[illegible]	0102102		2900713-021	8102218	[illegible]
18.8		PTA/PEA MOUNTING FIXTURE	1-10	0102086		[illegible]	[illegible]	[illegible]
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 ([illegible])	[illegible]	[illegible]	[illegible]
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 8	[illegible]	NAS-497 ([illegible])	[illegible]	[illegible]	[illegible]
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102115	ECP [illegible]	1902431-021	8102245	1902431-0[illegible]
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	[illegible]	ECP [illegible]	[illegible]	[illegible]	[illegible]
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP [illegible]	[illegible]	8102244	[illegible]
	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE	1-18	0102126	ECP [illegible]	[illegible]	[illegible]	[illegible]
TBA	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	[illegible]	0102128	ECP 388 R1	[illegible]	8102267	[illegible]
	[illegible]	PSA ADAPTER MODULE		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP	[illegible]	3 DEC 65	
N		REVISION STATUS CHANGED	JHP	[illegible]	15 DEC 65	
P		REVISED PER TDRR 25338	JN	[illegible]	21 JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD	[illegible]	17 FEB 66	
T		REVISED PER TDRR 26111	RLP	[illegible]	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P.	[illegible]	24 FEB 66	
V		REVISED PER TDRR 27658	JB	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.	[illegible]	13 MAY 66	
Y		[illegible]	[illegible]	[illegible]	[illegible] 66	
Z		REVISED PER TDRR 29232	JIMP	[illegible]	7 JUN 66	
AA		REVISED PER TDRR 29994.	RWH	[illegible]	14 JUL 66	
[illegible]		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153	[illegible]	[illegible]	21-JUL-66	
AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME	[illegible]	21 OCT 66	
AF		REVISED PER TDRR 31623	J.C	[illegible]	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	[illegible]	13 DEC 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL

NEXT ASSY | USED ON
APPLICATION

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN [illegible] 10-[illegible]-65
CHECKED [illegible] 11-3-65
APPROVED
APPROVED [illegible] 11-3-65
APPROVED MIT [illegible]
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 AG

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102079	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902289
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	[illegible]	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102087	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-8	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, 6M42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9,11-16	0102045		1902304-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9,11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7,9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900289-011	8102111	1900289-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP		15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED		CP	6-APR-66	
W		REVISION STATUS CHANGED	RKT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMB		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	MB	RW	21 OCT 66	
AF		REVISION STATUS CHANGED	JC	RW	26 OCT 66	
AG		REVISION STATUS CHANGED.	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED.	SS	N.W.	13 DEC 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.

DRAWN
CHECKED 11-2-65
APPROVED
APPROVED E.A.Olson 11-3-65
APPROVED MIT
APPROVED NASC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 2

1021201 AH

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
TBA	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
TBA	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECR0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25558	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MCM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ T		REVISED PER TDRR 26111	RLP	WS	18 FEB 66	
Ⓜ U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Ⓜ Y		REVISED PER TDRR 29000	RLP		27 MAY 66	
Ⓜ Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ AB		REVISED PER TDRR 30101 -	J.K.	JAC	15 JUL 66	
Ⓜ AC		REVISED PER TDRR30153			21-JUL 66	
Ⓜ AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ AF		REVISED PER TDRR 31623	JC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 AH

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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
~~11.0~~	~~ADDITION OF STOCK RECORDERS~~	~~FIXTURE, G&N HARNESS HANDLING & INSTALLATION~~	~~1-14~~	~~0102066~~	~~ECP-75~~	~~1901846-021~~	~~8102145~~	~~1901846-031~~
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5,7-9, 11-16,18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5,7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	810219[illegible]	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5,7-9,11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 CCA0169	1900342-021	8102204	1900342-031
	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
TBA	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
TBA	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
Ⓜ	L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
Ⓜ	M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ	P		REVISED PER TDRR 25838	JN		21-JAN 66	
	R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ	T		REVISED PER TDRR 26111	RLP	W.D.	18 FEB 66	
Ⓜ	U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	
Ⓜ	V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
Ⓜ	W		REVISED PER TDRR 28594	[illegible]		13 MAY 66	
Ⓜ	Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ	Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ	AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
Ⓜ	AC		REVISED PER TDRR 30153			21-JUL 66	
Ⓜ	AD		REVISED PER TDRR 31045	J.D.	NS	20 SEP 66	
	AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ	AF		REVISED PER TDRR 31623	J.C.	RLW	26 OCT 66	
	AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
	AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
	AJ		REVISED PER TDRR 32124	S.S.	N.W.	13 DEC 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 3

1021201 AJ

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS / R.W.

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
TBA-0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW			MARR KIT 3		8102158	
1		OITS	3-5,7-9, 11-16,18-24	0102120	NASA 9-497 SA42	2900022-031	8102247	2900022-041
2		OIA		0102119		2900023-031	8102251	2900023-041
3		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
4		INT. CABLE SET, BLK II	1-12	0102122		2900712-031	8102258	2900712-041
5		INT. CABLE SET, SER 100	3-5,7,9,11-16	0102117		2900713-031	8102248	2900713-041
6		INT. CABLE SET, LEM	1-13	0102118		6900043-031	8102249	6900043-041
7		PORT. TEMP. CONTROLLER	1-17	0102115		2900060-011	8102250	2900060-021
8		LIFTING TEMP CONTROLLER	1-4	0102129		2900063-011	8102246	2900063-021
TBA-9		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021

1021201 AJ

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 3

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9,11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CF	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			27 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	R	WH	28 MAR 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED C A Olsen 11-3-65
APPROVED MIT 11-4-65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 | SIZE D | DRAWING NO. 1021201
SCALE —— | SHEET 1 OF 3

1021201 AK

REVISIONS						
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.	
Ⓜ AJ		REVISED PER TDRR 32124		13 DEC 66	SS H.W.	
Ⓜ AK		REVISED PER TDRR 33239		29 MAR 67	[illegible] WM	

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MAPR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117	NASA 9-497 SA42	2900713-011	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		DO NOT SCALE THIS DRAWING	DRAWN F.P. GRASSO DATE 10.28.65 CHECKED E.A PULEK 11-2-65 APPROVAL E.A. OLSSON 11 3 65 CONTRACT	MASTER RETROFIT KIT LIST APOLLO G & N GSE (AC ELECTRONICS)
ND1000000		MATERIAL	NASA APPROVAL A.C METZGER 3NOV65 W. KUPFER MIT APPROVAL	SIZE D CODE IDENT NO. 99974 1021201
NEXT ASSY	USED ON	APPROVAL		SCALE — SHEET 3 OF 3
APPLICATIC. I				

1021201 AK

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8108018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900805-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES		—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET, INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
Ⓜ	L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
Ⓜ	M		REVISED PER TDRR 24431	RLP	[illegible]	3 DEC 65	
Ⓜ	N		REVISED PER TDRR 24566	JHP	[illegible]	15 DEC 65	
Ⓜ	P		REVISION STATUS CHANGED	JM	[illegible]	21-JAN-66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD	[illegible]	17 FEB 66	
Ⓜ	T		REVISION STATUS CHANGED	RLP	[illegible]	18 FEB 66	
Ⓜ	U		REVISION STATUS CHANGED	JHP	[illegible]	24 FEB 66	
Ⓜ	V		REVISION STATUS CHANGED	JB.	CF	6-APR-66	
Ⓜ	W		REVISION STATUS CHANGED	R.W.T	[illegible]	3 MAY 66	
Ⓜ	Y		REVISION STATUS CHANGED	RLP	[illegible]	24 MAY 66	
Ⓜ	Z		REVISION STATUS CHANGED	JMD	[illegible]	7 JUN 66	
	AA		REVISION STATUS CHANGED	RWH	[illegible]	14 JUL 66	
Ⓜ	AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
Ⓜ	AC		REVISION STATUS CHANGED	[illegible]	[illegible]	21 JUL 66	
Ⓜ	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
	AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
Ⓜ	AF		REVISION STATUS CHANGED	JC	RW	26 OCT 66	
	AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
	AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
	AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
	AL		REVISION STATUS CHANGED	DJW	[illegible]	26 APR 67	

1021201 AL

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN [illegible] 10-28-65
CHECKED [illegible] 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer [illegible]/65
A. L. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 3

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS R.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5,7-9, 11-16,18-24	0102120	NASA 9-497 SA42	2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET- BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET- BLK I SER 100	3-5,7-9, 11-16	0102117		2900713-011	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET- BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET- BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET- BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET- LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	MARR KIT 3	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061

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APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ + +
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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 3

1021201 AL

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2300072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102136	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW		—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5,7-9, 11-16,18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5,7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13(SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5,7-9,11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
Ⓜ	L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ	M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ	P		REVISED PER TDRR 25338	JN		21-JAN 66	
	R		REVISED PER TDRR 25895	RLP	NGM	15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ	T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
Ⓜ	U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
	V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ	W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Ⓜ	Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ	Z		REVISED PER TDRR 29232	JIMP		7 JUN 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ	AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
Ⓜ	AC		REVISED PER TDRR30153	M.G.		21-JUL 66	
Ⓜ	AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
	AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ	AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
	AG		REVISED PER TDRR 32113	S.S.	N.W	13 DEC 66	
	AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	S.S	N.W	13 DEC 66	
	AK		REVISED PER TDRR 33239		WH	28 MAR 67	
Ⓜ	AL		REVISION STATUS CHANGED	UJW		26 APR 67	
	AM		REVISION STATUS CHANGED	ES		[illegible] 67	

1021201 AM

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Dagger 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED A Olson 11-3-65
APPROVED MIT W Kupfer 3-1-65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE ——
SHEET 2 OF 3

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102013	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		900145-011	8102053	900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I, 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I, 100 CAPABILITY	HOSE ASSY		0102028		900866-011	8102098	1901876-011
8.3						900867-011	8102098	
8.4						1901663-011	8102098	
8.5						900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN CABLE SET	1-15	0102022		901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	902046-011
8.17.3		OPTICS, NAV. BASE MTG. FIXTURE	2-9	0102057		902301-011	8102140	902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901931-011	8102150	1901931-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	KLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CF	6-APR-66	
W		REVISION STATUS CHANGED	RWT		12 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JIM		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED	MG		21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR [illegible]	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	

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QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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CAPACITOR VALUES ARE IN μf
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FRACTIONS DECIMALS ANGLES
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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED
APPROVED MIT
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 3

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	[illegible] LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8	↓	HOSE SET, INTERCONN, G&N		0102049	↓	1901876-011	8102130	
9.9	↓	↓ , 155/055		0102049	↓	1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1	↓	GSE/PSA J-BOX	1&2	0102052	↓	1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1&2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1	↓	OITS	3-5, 7-9, 11-16, 18-24	0102072	↓	2900022-011	8102160	2900022-021
13.1.1	↓	OIA	↓	0102073	↓	2900023-011	8102162	2900023-021
13.1.2	↓	GDB	↓	0102071	↓	2900024-011	8102171	2900024-021
13.1.3	↓	G&N COOLANT & PWR CONSOLE	↓	0102083	↓	1902134-021	8102183	1902134-031
13.1.4	↓	CABLE SET, INTERCONNECT	↓	0102077	↓	2900025-011	8102170	2900025-021
13.2	↓	CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082	↓	6900043-011	8102179	6900043-021
13.3	↓	CABLE ASSY (SPEC. BLK II)	1-12	0102081	↓	2900712-011	8102178	2900712-021
13.4	↓	SUBSYS. MTG. FIXTURE	1-18	0102079	↓	2900070-011	8102184	2900070-021
13.5	↓	COMP. MTG. PLATE	1-13	0102080	↓	6900007-011	8102185	2900007-021
13.6	↓	PSA/TPA	1-19	0102069	↓	2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1	↓	OITS	3-5, 7-9, 11-16, 18-24	0102107	↓	2900022-021	8102196	2900022-031
18.1.1	↓	OIA	↓	0102106	↓	2900023-021	8102198	2900023-031
18.1.2	↓	GDB	↓	0102103	↓	2900024-021	8102197	2900024-031
18.1.3	↓	INTERCONNECT CABLE ASSY	↓	0102100	↓	2900025-021	8102193	2900025-031
18.2	↓	1-13 (SPEC. LEM) CABLE SET	1-13	0102091	↓	6900043-021	8102189	6900043-031
18.3	↓	(SPEC. BLK II)	1-12	0102101	↓	2900712-021	8102192	2900712-031
18.4	↓	CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102	↓	2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	↓	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE HANDLING C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RLP	MCM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000			24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153			21 JUL 66	
AD		REVISED PER TDRR 31045	JD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	NE		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C.	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	S.S.	NW	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible] 67	
AN		REVISION STATUS CHANGED			23 AUG 67	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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APPLICATION

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CAPACITOR VALUES ARE IN µf
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TOLERANCES ON
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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED C A Olson 11-3-65
APPROVED MIT W Kupfer
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE
SHEET 2 OF 3

1021201 AN

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021

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APPLICATION

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3 PLACE DECIMALS + −
ANGLES + −
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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN F.P.GRASSO DATE 10 28 65
CHECKED E.A.PULEK 11-2-65
APPROVAL E.A.OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C.METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 3

1021201 AN

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP 4	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102019	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102099	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN CABLE SET	1-15	0102022		1901303	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-[illegible]	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL & INST. FIXT	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS, NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	MAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102103	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T		3 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JIMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC.	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE, WIS.

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED
APPROVED MIT WK
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 3

1021201 AP

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	[illegible]	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		ISS/OSS		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102136	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W102)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE HANDLING C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JIMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153	M.J.		21-JUL 66	
AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JC	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	NW	13 DEC 66	
AH		REVISED PER TDRR 32121	SS	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239	R.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		67	
AN		REVISION STATUS CHANGED	HJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F P [illegible] 10-28-65
CHECKED 1-2-65
APPROVED
APPROVED A Olsen 11-3-65
APPROVED MIT W Kupfer
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE
SHEET 2 OF 3

1021201 AF

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34000		24 Aug 67	
AN		REVISED PER TDRR 34295		29 AUG	
AP		REVISED PER TDRR 34396		29 AUG 67	DG

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5,7-9, 11-16,18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5,7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102243	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-051 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	[illegible]
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900085-011	8102281	[illegible]
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	[illegible]
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031

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APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
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CHECKED E A FULEK [illegible]
APPROVAL E A OLSSON 11 3 65
CONTRACT
NASA APPROVAL A C METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021201
SCALE —
SHEET 3 OF 3

1021201 AP

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	3-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—	—	—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-8	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET, INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	4-8-65	
L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP		15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	J.	CF	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T.		13 MAY 66	
Y		REVISION STATUS CHANGED	KLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMO		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	R	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		2 AUG 67	
AN		REVISION STATUS CHANGED	TLC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
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APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Young 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3/4/65 A. L. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 3

1021201 AR

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102048		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102152	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-016		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25838	JN		21-JAN-66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153	M.J.		21-JUL 66	
AD		REVISED PER TDRR 31045	JD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JLC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S	N.W	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239		WM	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible] 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201

SCALE
SHEET 2 OF 3

1021201 AR

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS R.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	T/C
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5,7-9, 11-16,18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5,7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	MARR KIT 3	2900065-011	8102336	2900065-021
		COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1,2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

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APPLICATION

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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-29-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3NOV65 MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021201
SCALE — SHEET 3 OF 3

1021201 AR

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8108018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM	PJ	21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
V		REVISION STATUS CHANGED	JB.	CF	6-APR-66	
W		REVISION STATUS CHANGED	R.N.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
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APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED E A Chun 11-3-65
APPROVED MIT 11/4/65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2300072-011
9.8	↓	HOSE SET, INTERCONN, G&N		0102049	↓	1901876-011	8102130	
9.9	↓	↓ 155/055		0102049	↓	1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102136	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1	↓	GSE/PSA J-BOX	1 & 2	0102052	↓	1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1 & 2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1	↓	OITS	3-5, 7-9, 11-16, 18-24	0102072	↓	2900022-011	8102160	2900022-021
13.1.1	↓	OIA	↓	0102073	↓	2900023-011	8102162	2900023-021
13.1.2	↓	GDB	↓	0102071	↓	2900024-011	8102171	2900024-021
13.1.3	↓	G&N COOLANT & PWR CONSOLE	↓	0102083	↓	1902134-021	8102183	1902134-031
13.1.4	↓	CABLE SET, INTERCONNECT	↓	0102077	↓	2900025-011	8102170	2900025-021
13.2	↓	CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082	↓	6900043-011	8102179	6900043-021
13.3	↓	CABLE ASSY (SPEC. BLK II)	1-12	0102081	↓	2900712-011	8102178	2900712-021
13.4	↓	SUBSYS. MTG. FIXTURE	1-18	0102079	↓	2900070-011	8102184	2900070-021
13.5	↓	COMP. MTG. PLATE	1-13	0102080	↓	6900007-011	8102185	2900007-021
13.6	↓	PSA/TPA	1-19	0102069	↓	2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1	↓	OITS	3-5, 7-9, 11-16, 18-24	0102107	↓	2900022-021	8102196	2900022-031
18.1.1	↓	OIA	↓	0102106	↓	2900023-021	8102198	2900023-031
18.1.2	↓	GDB	↓	0102103	↓	2900024-021	8102197	2900024-031
18.1.3	↓	INTERCONNECT CABLE ASSY	↓	0102100	↓	2900025-021	8102193	2900025-031
18.2	↓	1-13 (SPEC. LEM) CABLE SET	1-13	0102091	↓	6900043-021	8102189	6900043-031
18.3	↓	(SPEC. BLK II)	1-12	0102101	↓	2900712-021	8102192	2900712-031
18.4	↓	CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102	↓	2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	↓	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726		CP	11-3-65	
L		REVISED PER TDRR 23723		CP	10 NOV 65	
M		REVISION STATUS CHANGED	RP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RP		15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RP		18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594			19 MAY 66	
Y		REVISED PER TDRR 29000	RP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		[illegible] JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153			21 JUL 66	
AD		REVISED PER TDRR 31045	JD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	S.S	NW	13 DEC 66	
AK		REVISED PER TDRR 33239	R.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible] 67	
AN		REVISION STATUS CHANGED			23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 AS

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJN
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TAC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120	NASA 9-497 SA42	2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET- BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET- BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET - BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET- LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET- BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET- BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET- BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET- LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT- CONSOLE, CAL & TEST ASSY- SCM/PSAAM	CONSOLE, CAL & TEST ASSY- SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT - PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P GRASSO DATE 10-28-65
CHECKED E.A PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 AS

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	P-G

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071

1021201 AS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + −
3 PLACE DECIMALS + −
ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN E.P.GRASSO DATE 10-28-65
CHECKED E.A.PULEK 11-2-65
APPROVAL E.A.OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C.METZGER
3 NOV 65
MIT APPROVAL W.KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-9	0102010		1900049-011	8102005	1900049-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/O & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	[illegible]	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		31 JAN 66	
R		REVISION STATUS CHANGED	RLP		15 FEB 66	
S		REVISION STATUS CHANGED	OMD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	J.	CP	6 APR 66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		[illegible] 66	
Z		REVISION STATUS CHANGED	JMC		7 JUN 66	
AA		REVISION STATUS CHANGED	RWM		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JRC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	19 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	[illegible] 66	
AK		REVISION STATUS CHANGED			[illegible] 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		2 AUG 67	
AN		REVISION STATUS CHANGED	TLC		23 AUG 67	
AP		REVISION STATUS CHANGED	DS		24 AUG 67	
AR		REVISION STATUS CHANGED	DS		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 [illegible] 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

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CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-29-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 11/4/65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET

1021201 AT

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		951876-011	8102130	
9.9		ISS/OSS		0102048		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-016		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102248	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN-66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	JB.	CP	6-APR-66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		12 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153			21-JUL-66	
AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JLC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		67	
AN		REVISION STATUS CHANGED	HJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
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APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kyefer 3 Nov 65
A. C. Metzger
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

1021201 AT

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900996-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.							
30.0	RETROFIT KIT-PSA ADAPTER MODULE (L ,	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

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APPLICATION	

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2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
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MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 AT

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-17	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031

1021201 AT

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E A PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
MIT APPROVAL W. KUPFER 3 NOV 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

NOTICE: [illegible]

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2	↓	REMOTE OPTICS CONTROLLER	6-9	0102010	↓	1900431-011	8102005	1900431-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—	↓	—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	1900004-021	8102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	↓	1900866-011	8102098	1901876-011
8.3	↓	↓		↓	↓	1900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	1900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	1900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	1900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	1901308	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-3, 5-14	0102015	↓	1900931-011	8102044	1901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-14	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	↓	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-8	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	↓	—	8102133	—
8.17.1	↓	G & N MOUNTING FIXTURE	2-9	0102058	↓	1902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER	1-9	0102051	↓	1902046-011	8102136	1902046-011
8.17.3	↓	OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057	↓	1902301-011	8102140	1902301-011
8.17.4.0	↓	OITS	3-17	—	↓	1902300-011	8102143	1902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER	3-17	—	↓	1901976-011	8102142	1901976-011
8.17.4.2	↓	INTERCONN. CABLE SET	3-17	—	↓	1902299	8102146	1902299
8.17.4.3	↓	GSE J-BOX OVERHEAD	3-17	0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER	2,3 & 5-17	0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3-8, 11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE		0102041	↓	1902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET INTERCONNECT	1-7, 9-14	0102055	↓	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT CART	2-10		↓	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	1900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-7	0102058	↓	1902204-011	8102112	1900067-021
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	↓	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	J.J.	CP		
Ⓜ	L		REVISION STATUS CHANGED	J.J.	CP	18 NOV 65	
Ⓜ	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ	P		REVISION STATUS CHANGED	JM		21-JAN-66	
	R		REVISION STATUS CHANGED	RLP		15 FEB 66	
	S		REVISION STATUS CHANGED	DKD		17 FEB 66	
Ⓜ	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
Ⓜ	U		REVISION STATUS CHANGED	JHP		24 FEB 66	
m	V		REVISION STATUS CHANGED	J.		6-APR-66	
Ⓜ	W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Ⓜ	Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Ⓜ	Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
Ⓜ	AB		REVISION STATUS CHANGED	J.K	JFC	15 JUL 66	
●	AC		REVISION STATUS CHANGED			21 JUL 66	
Ⓜ	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
	AE		REVISION STATUS CHANGED	ME		21 OCT 66	
Ⓜ	AF		REVISION STATUS CHANGED	JC		26 OCT 66	
	AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
	AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
	AK		REVISION STATUS CHANGED		WH	28 MAR 67	
Ⓜ	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ	AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
	AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
	AU		REVISION STATUS CHANGED	T.		8 JAN 68	

1021201 AU

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 11/4/65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 4

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497,SA42	1902301-011	8102131	2900072-011
9.8	↓	HOSE SET, INTERCONN, G&N		0102049	↓	1901876-011	8102130	
9.9	↓	↓ , ISS/OSS		0102048	↓	1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1	↓	GSE/PSA J-BOX	1&2	0102052	↓	1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1&2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1	↓	CITS	3-5,7-9, 11-16,18-24	0102072	↓	2900022-011	8102160	2900022-021
13.1.1	↓	OIA	↓	0102073	↓	2900023-011	8102162	2900023-021
13.1.2	↓	GDB	↓	0102071	↓	2900024-011	8102171	2900024-021
13.1.3	↓	G&N COOLANT & PWR CONSOLE	↓	0102083	↓	1902134-021	8102183	1902134-031
13.1.4	↓	CABLE SET, INTERCONNECT	↓	0102077	↓	2900025-011	8102170	2900025-021
13.2	↓	CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082	↓	6900043-011	8102179	6900043-021
13.3	↓	CABLE ASSY (SPEC. BLK II)	1-12	0102081	↓	2900712-011	8102178	2900712-021
13.4	↓	SUBSYS. MTG. FIXTURE	1-18	0102079	↓	2900070-011	8102184	2900070-021
13.5	↓	COMP. MTG. PLATE	1-13	0102080	↓	6900007-011	8102185	2900007-021
13.6	↓	PSA/TPA	1-19	0102069	↓	2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1	↓	OITS	3-5,7-9 11-16, 18-24	0102107	↓	2900022-021	8102196	2900022-031
18.1.1	↓	OIA	↓	0102106	↓	2900023-021	8102198	2900023-031
18.1.2	↓	GDB	↓	0102103	↓	2900024-021	8102197	2900024-031
18.1.3	↓	INTERCONNECT CABLE ASSY	↓	0102100	↓	2900025-021	8102193	2900025-031
18.2	↓	1-13 (SPEC. LEM) CABLE SET	1-13	0102091	↓	6900043-021	8102189	6900043-031
18.3	↓	(SPEC. BLK II)	1-12	0102101	↓	2900712-021	8102192	2900712-031
18.4	↓	CABLE SET, INTERCONNECT	3-5,7-9,11-16	0102102	↓	2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	↓	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 CCA 0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25838	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WS	18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JRC	15 JUL 66	
AC		REVISED PER TDRR 30153	M.J.		21 JUL 66	
AD		REVISED PER TDRR 31045	SD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	[illegible] 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible] 67	
AN		REVISION STATUS CHANGED			23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED			8 JAN	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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APPLICATION

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RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	
AU		REVISION STATUS CHANGED		8 JAN 68	

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		O/A		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129	NASA 9-497 SA42	2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR COVER SET, ELECTRICAL CONNECTOR	1-22 1-22	0102132	MARR KIT 3	2900065-011 6900001-011	8102336	2900065-021 6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-29-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3NOV65 KIT APPROVAL W. KUPFER

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

AU 1021201

[illegible]

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-17	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	
AU		REVISED PER TDRR 35304		JAN 68	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

ND1000000
NEXT ASSY
USED ON
APPLICATION

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E A PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65
KIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO GEN GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

1021201 AU

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO AGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP 12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102016	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I D & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102036	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901668-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL & INST FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS, NAV BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	4-8-65	
L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OMD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED		CB	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			27 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	MB		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED		WH	67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TE		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	

1021201 AV

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED 11-5-65
APPROVED MIT
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102 31	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021 6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W1[illegible]9)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK I/LEM COMPATABILITY	ICTC	1-14	0102111	NAS 497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	1-13	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RP		3 DEC 65	
N		REVISION STATUS CHANGED	JMP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B	CP	6 APR 66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153			21 JUL 66	
AD		REVISED PER TDRR 31045	SD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	NW	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	[illegible] 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible] 67	
AN		REVISION STATUS CHANGED	MJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED			8 JAN 6	
AV		REVISED PER TDRR 35569	JRK		19 FEB 6	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN E P Lawson 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E.A. Olson 11-2-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

1021201 AV

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	TK
AV		REVISION STATUS CHANGED		14 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.12		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR COVER SET, ELECTRICAL CONNECTOR	1-22 1-22	0102132	MARR KIT 3	2900065-011 6900001-011	8102336	2900065-021 6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-C21
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900996-011	8102278	2900996-021
29.2		G&N MTG. FIX. BLK II	1-10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4 29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102265	2901143-021
31.0	RETROFIT KIT FOR COVER APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN F.P.GRASSO DATE 10-28-65
CHECKED E.A.PULEK 11-2-65
APPROVAL E.A.OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C.METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021201
SCALE — SHEET 3 OF 4

1021201 AV

[illegible]

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MY
AU		REVISED PER TDRR 35304		8 JAN 68	E
AV		REVISED PER TDRR 35569		14 FEB 68	JRK

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-17	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC.CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
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APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER 3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO GEN GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO 99974
1021201
SCALE —
SHEET 4 OF 4

1021201 AV

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102019	ECP 12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	3-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-10	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-02	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		RSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102018	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102037		1902204-011	8102112	2900076-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP	JD	18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED		CP	6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			27 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
AF		REVISION STATUS CHANGED	JC	RLW	26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED		WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TE		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	

1021201 AW

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED C A Olsen 11-3-65
APPROVED MIT 11/4/65
A. A. M. ZOG
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		ISS/OSS		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021[illegible]6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
(M)	L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
(M)	M		REVISION STATUS CHANGED	RLP		3 DEC 65	
(M)	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
(M)	P		REVISED PER TDRR 25338	JN		21 JAN 66	
	R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
(M)	T		REVISED PER TDRR 26111	RLP	WS	18 FEB 66	
(M)	U		REVISED PER TDRR 26371	JHP		24 FEB 66	
	V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
(M)	W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
(M)	Y		REVISED PER TDRR 29000			24 MAY 66	
(M)	Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
(M)	AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
(M)	AC		REVISED PER TDRR 30153			21 JUL 66	
(M)	AD		REVISED PER TDRR 31045	JD	NS	20 SEP 66	
	AE		REVISED PER TDRR 31533	ME		21 OCT 66	
(M)	AF		REVISED PER TDRR 31623	JC		26 OCT 66	
	AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
	AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
(M)	AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
	AK		REVISED PER TDRR 33239			[illegible] 67	
(M)	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
(M)	AM		REVISION STATUS CHANGED	ES		[illegible] 67	
	AN		REVISION STATUS CHANGED			23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
(M)	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
(M)	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
(M)	AU		REVISION STATUS CHANGED			8 JAN [illegible]	
	AV		REVISED PER TDRR 35569	WRK		[illegible] FEB [illegible]	
	AW		REVISED PER TDRR 35631	LK		20 F[illegible]	

1021201 AW

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 2 OF 4

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	TK
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1002000	
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	
AU		REVISED PER TDRR 35304		8 JAN 68	
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-17	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11&12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER 3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

1021201 AW

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP 12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G&N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-10	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.15		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-8	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087		1902204-011	8102112	2900076-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	~~4-8-65~~	
L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED		CF	6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMO		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			27 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
AF		REVISION STATUS CHANGED	JC	RW	26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	R	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TE		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	

1021201 AY

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED 11-3-65
APPROVED MIT A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2300072
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		↓ ISS/OSS		0102049		1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	81021.6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1&2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT	↓	0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY	↓	0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	↓	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25838	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ T		REVISED PER TDRR 26111	RP	WD	18 FEB 66	
Ⓜ U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
Ⓜ W		REVISED PER TDRR 28594	RWT.		13 MAY 66	
Ⓜ Y		REVISED PER TDRR 29000	RP		24 MAY 66	
Ⓜ Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
Ⓜ AC		REVISED PER TDRR 30153	M.J.		21-JUL 66	
Ⓜ AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
Ⓜ AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239	R.	WM	28 MAR 67	
Ⓜ AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ AM		REVISION STATUS CHANGED	ES		[illegible]	
AN		REVISION STATUS CHANGED	JJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ AU		REVISION STATUS CHANGED	T.	MAR	8 JAN 68	
AV		REVISED PER TDRR 35569	JRK		19 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	

1021201 AY

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

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CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED

APPROVED MIT 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE —
SHEET 2 OF 4

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS R.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	TK
AV		REVISION STATUS CHANGED		14 FEB 68	JPK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5, 7-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
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APPLICATION

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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-29-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
MIT APPROVAL 3 NOV 65 W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 AY

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ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-17	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/FSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11&12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	WTY
AU		REVISED PER TDRR 35304		JAN 68	TE
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LR
AY		REVISED PER TDRR 35636		4 MAR 68	DL

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E A PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

1021201 AY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓		3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-10	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900787-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP TEMP CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS, NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087		1902204-011	8102112	2900076-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	[illegible]	
L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP		15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	J.	CP	6-APR-66	
W		REVISION STATUS CHANGED	RKT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMO		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			27 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	MB		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	R.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		24 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED			8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		APR 68	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND100C000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 11/4/65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 4

1021201 AZ

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N REFERENCE
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13&14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11&12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107	—	2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	NAS497 CCA0169	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	NAS-497 CCA-0169	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102248	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	3-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21 JAN 66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WS	18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	JB.	CP	6 APR 66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153	M.J.		21 JUL 66	
AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JC	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC	
AK		REVISED PER TDRR 33239		WA	[illegible] 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible] 67	
AN		REVISION STATUS CHANGED			23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED		MAR	8 JAN 68	
AV		REVISED PER TDRR 35569	JRK		FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 3-4-65 A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

1021201 AZ

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	MARR KIT 3	---	8102158	--
28.1		OITS	3-5,7-9, 11-16,18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
28.3		INT CABLE SET-BLK II	1-12	0102122		2900712-031	8102258	2900712-041
28.4		INT CABLE SET-BLK I SER 100	3-5,7-9, 11-16	0102117	NASA 9-497 SA42	2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-17	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
28.10		ADAPTER CABLE SET-BLK II	1-4	0102133		2901076-011	8102273	2901076-011
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132		2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22		MARR KIT 3	6900001-011		6900001-021
28.3.1	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	(MARR. KIT 3)	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10.1	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	(MARR. KIT 3)	2901076-021	8102273	2901076-021
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8,10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4								
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1,2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SJ N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	JC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	TK
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	CK
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		1 APR 68	PHG

ND1000000
NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3NOV65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 AZ

[illegible]

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	
AU		REVISED PER TDRR 35304		8 JAN 68	
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-17	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11 & 12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021

1021201 AZ

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + −
3 PLACE DECIMALS + −
ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~1-9~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——		——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓	↓	1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	——	——	——	NECP A-31	——	8102133	——
8.17.1		G & N MOUNTING FIXTURE	5 KITS	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		——		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		——		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		——		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	——	——	SA 42	——	8102100	——
9.1.0	BLOCK II LEM CAPABILITY	OITS	3,5-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087	↓	1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5		IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	J.	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		[illegible] 66	
Z		REVISION STATUS CHANGED	JIMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TK		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		11 FEB 69	
BE		REVISION STATUS CHANGED	B.		16 APR -69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	
BH		REVISION STATUS CHANGED	JJJ	CP	10 SEP 70	
BJ		REVISION STATUS CHANGED	DKD	CP	25 NOV 70	

1021201 BJ

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED C A Olson
APPROVED MIT W Kupfer
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 4

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REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	
AU		REVISED PER TDRR 35304		8 JAN 68	
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LR
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
BD		REVISED PER TDRR 37308		11 FEB 69	SA
BE		REVISED PER TDRR 37505		16-APR-69	B.
BF		REVISED PER TDRR 37821		24 SEP 69	M.G. CP
BG		REVISED PER TDRR 38162		17 [illegible] 70	M.G. CP
BH		REVISED PER TDRR 38204		10 SEP 70	JJJ CP
BJ		REVISED PER TDRR 38286		25 NOV 70	DKD CP

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4,6,8, 10-14,16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET, ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11 & 12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3, 5-9, 11-16, 18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051
44.0	RETROFIT KIT FOR BREAKOUT BOX AND ADAPTER CABLE SET (CABLE ASSY W-563)	BREAKOUT BOX AND ADAPTER CABLE SET	1-5	0102159	ECP 770	2901075-021	8102304	2901075-031
45.0	RETROFIT KIT-PSA ADAPTER MODULE (BLOCK II)	PSA ADAPTER MODULE	1-8	0102160	ECP 794	2901143-021	8102305	2901143-031
46.0	RETROFIT KIT-COOLANT FLUID JUMPER BY-PASS ASSY	JUMPER BY-PASS ASSY COOLANT FLUID BLOCK II	1-10	-	ECP 818	1021616-000	8102307	1021616-011
47.0	RETROFIT KIT FOR COOLANT SUPPLY ASSEMBLY	COOLANT SUPPLY ASSEMBLY	16, 506	-	ECP821-R1	1902133-021	8102309	1902133-031
47.1	RETROFIT KIT FOR G&N COOLANT AND POWER CONSOLE	G&N COOLANT AND POWER CONSOLE	13, 3, 21, 7, 10, 15, 18, 20, 24	-	ECP821-R1	1902134-031	8102308	1902134-041
47.2	RETROFIT KIT FOR GSE COOLANT INTER-CONNECT HOSE ASSEMBLY SET	HOSE ASSEMBLY SET GSE COOLANT INTERCONNECT	9 UNITS	—	ECP821-R1	2900405-011	8102306	2900405-021
48.0	ACCOMODATE LUNAR SAMPLE BOX	PSA ADAPTER MODULE	1-7	0102161	ECP-1014	6900088-031	8102310	6900088-041

BJ 1021201

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + −
3 PLACE DECIMALS + −
ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		, ISS/OSS	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021[illegible]6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1		OITS	3, 5-9 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE	3, 5-9 11-16, 18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3, 5-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1		OITS	3, 5-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA42	2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ T		REVISED PER TDRR 26111	RLP		18 FEB 66	
Ⓜ U		REVISED PER TDRR 26371	J.H.P	PJ	24 FEB 66	
Ⓜ V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ W		REVISED PER TDRR 28594	PWT		13 MAY 66	
Ⓜ Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
Ⓜ AC		REVISED PER TDRR30153	M.G.		21-JUL 66	
Ⓜ AD		REVISED PER TDRR 31045	SD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	N.W	13 DEC 66	
Ⓜ AJ		REVISED PER TDRR 32124	S.S	N.W	13 DEC 66	
AK		REVISED PER TDRR 33239	R.	WH	28 MAR 67	
Ⓜ AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ AM		REVISION STATUS CHANGED	ES		2 AUG 67	
AN		REVISION STATUS CHANGED	HJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67-	
Ⓜ AR		REVISION STATUS CHANGED	DG		30 AUG 67-	
Ⓜ AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ AU		REVISION STATUS CHANGED	R		8 JAN 68	
AV		REVISED PER TDRR 35569	JRK	JAK	14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
Ⓜ AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
Ⓜ BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
Ⓜ BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
Ⓜ BD		REVISION STATUS CHANGED	SA		11 FEB 69	
Ⓜ BE		REVISION STATUS CHANGED	B.	JAK	16-APR-69	
Ⓜ BF		REVISION STATUS CHANGED	M.G	CP	24 SEP 69	
Ⓜ BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	
Ⓜ BH		REVISION STATUS CHANGED	JJJ	CP	10 SEP 70	
BJ		REVISION STATUS CHANGED	DKD	CP	25 NOV 70	
BK		REVISION STATUS CHANGED	RP	J.E.G.	30 NOV 70	

1021201 BK

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~7-8~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102018		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901309-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓	↓	1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	NECP A-31	—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	5 KITS	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	SA 42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087	↓	1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5		IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726		CP	2-65	
L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM	PJ	21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
V		REVISION STATUS CHANGED	JB.	CF	6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JM		[illegible] 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED			[illegible] 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TE		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	

1021201 BC

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT
A. L. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G & N GSE (AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N REFERENCE
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		155/055	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021.6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1		OITS	3, 5-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE	3, 5-9, 11-16, 18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3, 5-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	–	–	SA-42		8102157	
18.1		OITS	3, 5-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA 42	2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, CM & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25558	JN		21-JAN-66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594			13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	TRC	15 JUL 66	
AC		REVISED PER TDRR30153			21-JUL 66	
AD		REVISED PER TDRR 31045	JD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	JC		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	NW	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	NW	13 DEC 66	
AK		REVISED PER TDRR 33239			67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES			
AN		REVISION STATUS CHANGED			23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED			3 JAN 68	
AV		REVISED PER TDRR 35569	WRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JRC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJ		5 SEP 68	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT 3-4-65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE —
SHEET 2 OF 4

1021201 EC

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS R.W.
AK		REVISED PER TDRR 33239		29 [illegible] 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TC
AP		REVISED PER TDRR 34396		24 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	E
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		[illegible] 68	
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		[illegible] 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A PULEK 11-2-65
APPROVAL E A OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

BC
1021201

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	
AU		REVISED PER TDRR 35304		JAN 68	
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISED PER TDRR 35636		4 MAR 68	DL
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4,6,8, 10-14,16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8,10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11&12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3,5-9, 11-16,18-24	0102157	ECP-705	2900023-041	8102301	2900023-051

BC 1021201

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW			NECP A-32		8102003	
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~1-9~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102012		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓	↓	1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	NECP A-31	—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	5 KITS	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	SA 42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8,10	0102087	↓	1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5		IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJJ	CP	11-3-65	
Ⓜ L		REVISION STATUS CHANGED	JJJ	CP	10 NOV 65	
Ⓜ M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	mem	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
Ⓜ T		REVISION STATUS CHANGED	RLP		18 FEB 66	
Ⓜ U		REVISION STATUS CHANGED	JHP		24 FEB 66	
Ⓜ V		REVISION STATUS CHANGED	B.	CF	6-APR-66	
Ⓜ W		REVISION STATUS CHANGED	R.W.T		MAY 66	
Ⓜ Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Ⓜ Z		REVISION STATUS CHANGED	JMP		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
Ⓜ AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
Ⓜ AC		REVISION STATUS CHANGED	M.Y	J.M.	21 JUL 66	
Ⓜ AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
Ⓜ AF		REVISION STATUS CHANGED	JC	RLW	26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
Ⓜ AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
Ⓜ AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ AU		REVISION STATUS CHANGED	TK		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
Ⓜ AY		REVISION STATUS CHANGED	DL	JGC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
Ⓜ BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
Ⓜ BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		11 FEB 69	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

BD
1021201

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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		↓ , 155/055	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1 & 2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1		OITS	3, 5-9 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA	↓	0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE	3, 5-9 11-16, 18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT	↓	0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3, 5-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1		OITS	3, 5-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY	↓	0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101	↓	2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA42	2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
(M)	L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ	M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ	P		REVISED PER TDRR 25338	JN		21-JAN 66	
	R		REVISED PER TDRR 25895	RLP		15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
(M)	T		REVISED PER TDRR 26111	RLP		18 FEB 66	
(M)	U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
	V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ	W		REVISED PER TDRR 28594	R.W.T.		66	
Ⓜ	Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ	Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ	AB		REVISED PER TDRR 30101		JAC	15 JUL 66	
Ⓜ	AC		REVISED PER TDRR30153			21-JUL 66	
Ⓜ	AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
	AE		REVISED PER TDRR 31533	ME		21 OCT 66	
(M)	AF		REVISED PER TDRR 31623	J.C		26 OCT 66	
	AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
	AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	S.S.	N.W.	13 DEC 66	
	AK		REVISED PER TDRR 33239		WH	28 MAR 67	
Ⓜ	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ	AM		REVISION STATUS CHANGED	ES		67	
	AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
(M)	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
(M)	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ	AU		REVISION STATUS CHANGED			8 JAN 68	
	AV		REVISED PER TDRR 35569	JRK		14 FEB 68	
	AW		REVISED PER TDRR 35631	LK		20 FEB 68	
Ⓜ	AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
	AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
(M)	BA		REVISED PER TDRR 36008	JJ		4 APR 68	
	BB		REVISION STATUS CHANGED	JJ		4 SEP 68	
(M)	BC		REVISION STATUS CHANGED	JJ		5 SEP 68	
	BD		REVISION STATUS CHANGED	SA		11 FEB 69	

BD

1021201

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Dresser 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E.A. Olsen 11-3-65
APPROVED MIT W. Gopher 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201
SCALE		SHEET 2 OF 2

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJN
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TAC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	MTY
AU		REVISION STATUS CHANGED		8 JAN 68	K
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJ
BD		REVISION STATUS CHANGED		11 FEB 69	SA

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET-BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + −
3 PLACE DECIMALS + −
ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 BD

NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MTY
AU		REVISED PER TDRR 35304		8 JAN 68	
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
BD		REVISED PER TDRR 37308		11 FEB 69	SA

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4, 6, 8, 10-14, 16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11 & 12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3, 5-9, 11-16, 18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051

ND1000000		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN F.P. GRASSO DATE 10-28-65 CHECKED E.A. PULEK 11-2-65 APPROVAL E.A. OLSSON 11-3-65 CONTRACT	MASTER RETROFIT KIT LIST APOLLO G&N GSE (AC ELECTRONICS)	
APPLICATION		MATERIAL	NASA APPROVAL A.C. METZGER 3 NOV 65 MIT APPROVAL W. KUPFER	SIZE D CODE IDENT NO. 99974	1021201
		APPROVAL		SCALE —	SHEET 4 OF 4

MIL 1077DK

BD 1021201

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~7-9~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901309-011	8102012	1901309-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓	↓	1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	NECP A-31	—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	5 KITS	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	SA 42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087	↓	1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5		IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJJ	CF	11-8-65	
Ⓜ	L		REVISION STATUS CHANGED	JJJ	CP	16 NOV 65	
Ⓜ	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ	P		REVISION STATUS CHANGED	JM	PZ	21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD		17 FEB 66	
Ⓜ	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
Ⓜ	U		REVISION STATUS CHANGED	JHP	PZ	24 FEB 66	
Ⓜ	V		REVISION STATUS CHANGED	B.	CF	6-APR-66	
Ⓜ	W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Ⓜ	Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Ⓜ	Z		REVISION STATUS CHANGED	JIM		66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
Ⓜ	AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
Ⓜ	AC		REVISION STATUS CHANGED			21 JUL 66	
Ⓜ	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
	AE		REVISION STATUS CHANGED	ME		21 OCT 66	
Ⓜ	AF		REVISION STATUS CHANGED	JC		26 OCT 66	
	AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
	AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
	AK		REVISION STATUS CHANGED			28 MAR	
Ⓜ	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ	AM		REVISION STATUS CHANGED	ES		2 AUG 67	
	AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ	AU		REVISION STATUS CHANGED	TK		8 JAN 68	
	AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
	AW		REVISED PER TDRR 35631	LK		20 FEB 68	
Ⓜ	AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
	AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
Ⓜ	BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
	BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
Ⓜ	BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
Ⓜ	BD		REVISION STATUS CHANGED	SA		11 FEB 69	
	BE		REVISION STATUS CHANGED	B.		16-APR-69	

1021201 BE

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8	↓	HOSE SET, INTERCONN, G&N	7 KITS	0102049	↓	1901876-011	8102130	2900405-011
9.9	↓	↓ , ISS/OSS	11 KITS	0102049	↓	1901875-011	8102132	2900405-011
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1	↓	GSE/PSA J-BOX	11 & 12	0102052	↓	1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1 & 2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1	↓	OITS	3, 5-9 11-16, 18-24	0102072	↓	2900022-011	8102160	2900022-021
13.1.1	↓	OIA	↓	0102073	↓	2900023-011	8102162	2900023-021
13.1.2	↓	GDB	1-19	0102071	↓	2900024-011	8102171	2900024-021
13.1.3	↓	G&N COOLANT & PWR CONSOLE	3, 5-9, 11-16, 18-24	0102083	↓	1902134-021	8102183	1902134-031
13.1.4	↓	CABLE SET, INTERCONNECT	↓	0102077	↓	2900025-011	8102170	2900025-021
13.2	↓	CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082	↓	6900043-011	8102179	6900043-021
13.3	↓	CABLE ASSY (SPEC. BLK II)	1-12	0102081	↓	2900712-011	8102178	2900712-021
13.4	↓	SUBSYS. MTG. FIXTURE	1-18	0102079	↓	2900070-011	8102184	2900070-021
13.5	↓	COMP. MTG. PLATE	1-13	0102080	↓	6900007-011	8102185	6900007-021
13.6	↓	PSA/TPA	1-19	0102069	↓	2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3,5-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1	↓	OITS	3, 5-9 11-16, 18-24	0102107	↓	2900022-021	8102196	2900022-031
18.1.1	↓	OIA	↓	0102106	↓	2900023-021	8102198	2900023-031
18.1.2	↓	GDB	↓	0102103	↓	2900024-021	8102197	2900024-031
18.1.3	↓	INTERCONNECT CABLE ASSY	↓	0102100	↓	2900025-021	8102193	2900025-031
18.2	↓	1-13 (SPEC. LEM) CABLE SET	1-13	0102091	↓	6900043-021	8102189	6900043-031
18.3	↓	(SPEC. BLK II)	1-12	0102101	↓	2900712-021	8102192	2900712-031
18.4	↓	CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA42	2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
Ⓜ	L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ	M		REVISION STATUS CHANGED	RP		3 DEC 65	
Ⓜ	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ	P		REVISED PER TDRR 25338	JN	PJ	21-JAN 66	
	R		REVISED PER TDRR 25895	RP	NEN	15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ	T		REVISED PER TDRR 26111	RP		18 FEB 66	
Ⓜ	U		REVISED PER TDRR 26371	J.H.P	PJ	24 FEB 66	
	V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ	W		REVISED PER TDRR 28594	[illegible]		13 MAY 66	
Ⓜ	Y		REVISED PER TDRR 29000	RP		24 MAY 66	
Ⓜ	Z		REVISED PER TDRR 29232	[illegible]		[illegible] 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ	AB		REVISED PER TDRR 30101	J.K.	TAC	15 JUL 66	
Ⓜ	AC		REVISED PER TDRR 30153	M.G.		21-JUL 66	
Ⓜ	AD		REVISED PER TDRR 31045	J.D.	NS	20 SEP 66	
	AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ	AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
	AG		REVISED PER TDRR 32113	S.S.	N.W	13 DEC 66	
	AH		REVISED PER TDRR 32121	S.S.	N.W	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	S.S.	N.W	13 DEC 66	
	AK		REVISED PER TDRR 33239	[illegible]	WH	[illegible] 67	
Ⓜ	AL		REVISION STATUS CHANGED	DJM		26 APR 67	
Ⓜ	AM		REVISION STATUS CHANGED	E.S		24 [illegible]	
	AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ	AU		REVISION STATUS CHANGED	[illegible]		8 JAN [illegible]	
	AV		REVISED PER TDRR 35569	JRK		14 FEB 68	
	AW		REVISED PER TDRR 35631	LK		23 FEB 68	
Ⓜ	AY		REVISION STATUS CHANGED	DL	TAC	4 MAR 68	
	AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
Ⓜ	BA		REVISED PER TDRR 36008	JJ		4 APR 68	
	BB		REVISION STATUS CHANGED	JJ		4 SEP 68	
Ⓜ	BC		REVISION STATUS CHANGED	JJ		5 SEP 68	
Ⓜ	BD		REVISION STATUS CHANGED	SA		1 FEB 69	
	BE		REVISION STATUS CHANGED	B.		16-APR-69	

1021201 BE

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

		DATE
DRAWN	F.P. [illegible]	10-28-65
CHECKED	E. [illegible]	11-2-65
APPROVED		
APPROVED	E.A. Olsen	11-3-65
APPROVED MIT	W. Gufler A. C. METZGER	3 Nov 65
APPROVED MSC		

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 2 OF 4

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET-BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
		COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TLC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	
AU		REVISION STATUS CHANGED		8 JAN 68	
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		[illegible] 68	
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJ
BD		REVISION STATUS CHANGED		11 FEB 69	SA
BE		REVISION STATUS CHANGED		16 APR 69	B.

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS 3 PLACE DECIMALS ANGLES
+ + +
− − −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 BE

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REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
Ⓜ AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MTY
Ⓜ AU		REVISED PER TDRR 35304		8 JAN 68	T
AV		*REVISED PER TDRR 35569*		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
Ⓜ AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
Ⓜ BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
Ⓜ BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
Ⓜ BD		REVISED PER TDRR 37308		11 FEB 69	SA
BE		*REVISED PER TDRR 37505*		16-APR-69	B.

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4, 6, 8, 10-14, 16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11 & 12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3, 5-9, 11-16, 18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051
44.0	RETROFIT KIT FOR BREAKOUT BOX AND ADAPTER CABLE SET (CABLE ASSY W-563)	BREAKOUT BOX AND ADAPTER CABLE SET	1-5	0102159	ECP 770	2901075-021	8102304	2901075-031

BE

1021201

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NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± | 3 PLACE DECIMALS ± | ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN E.P. GRASS DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER 3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

MIL 10770-K

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~1-8~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓	↓	1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	NECP A-31	—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	5 KITS	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	SA 42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087		1902204-011	8102112	2900067-021
					↓	1902204-021		2900067-031
9.5		IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CH	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-3-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T.		13 MAY 66	
Y		REVISION STATUS CHANGED	KLP		66	
Z		REVISION STATUS CHANGED	JMP		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED			21-JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME		21 OCT 66	
AF		REVISION STATUS CHANGED	JC		26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TK		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		11 FEB 69	
BE		REVISION STATUS CHANGED	B.		16 APR-69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	

1021201 BF

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		, 155/055	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-7C	—	8102159	—
13.1		OITS	3, 5-9 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE	3, 5-9, 11-16, 18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3, 5-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1		OITS	3, 5-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA42	2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MEN	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153			21-JUL 66	
AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C		26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	S.S.	N.W.	13 DEC 66	
AK		REVISED PER TDRR 33239			28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TK		8 JAN 68	
AV		REVISED PER TDRR 35569	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		11 FEB 69	
BE		REVISION STATUS CHANGED	B.		16-APR-69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	

1021201 BF

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 2 OF 4

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJN
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TAC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	K
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJJ
BD		REVISION STATUS CHANGED		11 FEB 69	SA
BE		REVISION STATUS CHANGED		16 APR -69	B.
BF		REVISION STATUS CHANGED		24 SEP 69	M.G.

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET-BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4 29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 BF

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4,6,8, 10-14,16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC.CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8,10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11&12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3,5-9, 11-16,18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051
44.0	RETROFIT KIT FOR BREAKOUT BOX AND ADAPTER CABLE SET (CABLE ASSY W-563)	BREAKOUT BOX AND ADAPTER CABLE SET	1-5	0102159	ECP 770	2901075-021	8102304	2901075-031
45.0	RETROFIT KIT-PSA ADAPTER MODULE (BLOCK II)	PSA ADAPTER MODULE	1-8	0102160	ECP 794	2901143-021	8102305	2901143-031

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MTY
AU		REVISED PER TDRR 35304		8 JAN 68	T
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
BD		REVISED PER TDRR 37308		11 FEB 69	SA
BE		REVISED PER TDRR 37505		16-APR-69	B.
BF		REVISED PER TDRR 37821		24 SEP 69	M.G

1021201 BF

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN E.P.GRASSO DATE 10-28-65
CHECKED E.A.PULEK 11-2-65
APPROVAL E.A.OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C.METZGER
3 NOV 65 MIT APPROVAL W.KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~7-9~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-17	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	NECP A-31	—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	5 KITS	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX		0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	SA 42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-01
9.2		G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-8, 10	0102087		1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5		IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-3-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP	[illegible]	3 DEC 65	
N		REVISED PER TDRR 24566	JHP	[illegible]	15 DEC 65	
P		REVISION STATUS CHANGED	JM	PJ	21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD	[illegible]	17 FEB 66	
T		REVISION STATUS CHANGED	RLP	W.D.	18 FEB 66	
U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
V		REVISION STATUS CHANGED	B.	CF	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T.	[illegible]	13 MAY 66	
Y		REVISION STATUS CHANGED	RLP	[illegible]	24 MAY 66	
Z		REVISION STATUS CHANGED	JMP	[illegible]	7 JUN 66	
AA		REVISION STATUS CHANGED	RWH	[illegible]	14 JUL 66	
AB		REVISION STATUS CHANGED	J.K.	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED	M.G.	V.M.	21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME	KW	21 OCT 66	
AF		REVISION STATUS CHANGED	JC	RW	26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW	[illegible]	26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC	[illegible]	23 AUG 67	
AP		REVISION STATUS CHANGED	DG	[illegible]	29 AUG 67	
AR		REVISION STATUS CHANGED	DG	[illegible]	30 AUG 67	
AS		REVISED PER TDRR 34659	PHG	[illegible]	28 SEP 67	
AT		REVISION STATUS CHANGED	MTY	[illegible]	28 DEC 67	
AU		REVISION STATUS CHANGED	TK	[illegible]	8 JAN 68	
AV		REVISION STATUS CHANGED	JRK	[illegible]	14 FEB 68	
AW		REVISED PER TDRR 35631	LK	[illegible]	20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG	[illegible]	1 APR 68	
BA		REVISED PER TDRR 36008	JJJ	[illegible]	4 APR 68	
BB		REVISION STATUS CHANGED	JJJ	[illegible]	4 SEP 68	
BC		REVISION STATUS CHANGED	JJJ	[illegible]	5 SEP 68	
BD		REVISION STATUS CHANGED	SA	[illegible]	11 FEB 69	
BE		REVISION STATUS CHANGED	B.	[illegible]	16-APR-69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	

BG
1021201

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. [illegible] 10-28-65
CHECKED [illegible] 11-2-65
APPROVED
APPROVED E.A. Olson 11-3-65
APPROVED MIT W. [illegible] 3 Nov 65
A. K. [illegible]
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST APOLLO G & N GSE (AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 4

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		, 155/055	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP 0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1		OITS	3, 5-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE	3, 5-9, 11-16, 18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, I-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3, 5-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1		OITS	3, 5-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA42	2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	N.E.W.	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594	RWT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JIMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR 30153	M.G.		21-JUL 66	
AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S	N.W	13 DEC	
AJ		REVISED PER TDRR 32124	S.S	N.W	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES			
AN		REVISION STATUS CHANGED			23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED			8 JAN 68	
AV		REVISED PER TDRR 35569	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		1 FEB 69	
BE		REVISION STATUS CHANGED	B.		16-APR-69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	

BG

1021201

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 2 OF 4

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
AU		REVISION STATUS CHANGED		8 JAN 68	K
AV		REVISION STATUS CHANGED		14 FEB 68	URK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJJ
BD		REVISION STATUS CHANGED		11 FEB 69	SA
BE		REVISION STATUS CHANGED		16 APR 69	B.
BF		REVISION STATUS CHANGED		24 SEP 69	M.G.
BG		REVISION STATUS CHANGED		17 JUN 70	M.G.

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET-BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT 3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 B6

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ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4, 6, 8, 10-14, 16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8, 10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11 & 12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3, 5-9, 11-16, 18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051
44.0	RETROFIT KIT FOR BREAKOUT BOX AND ADAPTER CABLE SET (CABLE ASSY W-563)	BREAKOUT BOX AND ADAPTER CABLE SET	1-5	0102159	ECP 770	2901075-021	8102304	2901075-031
45.0	RETROFIT KIT-PSA ADAPTER MODULE (BLOCK II)	PSA ADAPTER MODULE	1-8	0102160	ECP 794	2901143-021	8102305	2901143-031
46.0	RETROFIT KIT-COOLANT FLUID JUMPER BY-PASS ASSY	JUMPER BY-PASS ASSY COOLANT FLUID BLOCK II	1-10	-	ECP 818	1021616-000	8102307	1021616-011

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MTY
AU		REVISED PER TDRR 35304		8 JAN 68	TE
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
BD		REVISED PER TDRR 37308		11 FEB 69	SA
BE		REVISED PER TDRR 37505		16-APR-69	B.
BF		REVISED PER TDRR 37821		24 SEP 69	M.G. CP
BG		REVISED PER TDRR 38162		17 JUN 70	M.G. CP

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS +/- 3 PLACE DECIMALS +/- ANGLES +/-
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN E.P.GRASSO DATE 10-28-65
CHECKED E.A.PULEK 11-2-65
APPROVAL E.A.OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C.METZGER
3 NOV 65
MIT APPROVAL W.KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

1021201 BG

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~7-9~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—	↓	—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	1900004-021	8102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3	↓	↓		↓	↓	1900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	1900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	1900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	1900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	1901308	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-14	0102015	↓	1900931-011	8102044	1901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	NECP A-31	—	8102133	—
8.17.1	↓	G & N MOUNTING FIXTURE	5 KITS	0102058	↓	1902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER	↓	0102051	↓	1902046-011	8102136	1902046-011
8.17.3	↓	OPTICS/NAV. BASE MTG. FIXTURE	↓	0102057	↓	1902301-011	8102140	1902301-011
8.17.4.0	↓	OITS	↓	—	↓	1902300-011	8102143	1902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER	↓	—	↓	1901976-011	8102142	1901976-011
8.17.4.2	↓	INTERCONN. CABLE SET	↓	—	↓	1902299	8102146	1902299
8.17.4.3	↓	GSE J-BOX OVERHEAD	↓	0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER	↓	0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	SA 42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET, INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	1900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-8, 10	0102087	↓	1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1	0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	J	CP	11-3-65	
L		REVISION STATUS CHANGED	J J	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM	PJ	21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	
V		REVISION STATUS CHANGED	JB	CF	6-APR-66	
W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JMD		7 JUN 66	
AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
AC		REVISION STATUS CHANGED		V.M.	21 JUL 66	
AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
AE		REVISION STATUS CHANGED	ME	RW	21 OCT 66	
AF		REVISION STATUS CHANGED	JC	RW	26 OCT 66	
AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
AH		REVISION STATUS CHANGED	SS	NW.	13 DEC 66	
AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED	TK		8 JAN 68	
AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		11 FEB 69	
BE		REVISION STATUS CHANGED	JB.		16 APR 69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	
BH		REVISION STATUS CHANGED	JJJ	CP	10 SEP 70	

1021201 BH

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 4

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ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED REFERENCE)	RFK NO.	NEW P/N REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		↓ , 155/055	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1 & 2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP 0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1		OITS	3, 5-9 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA	↓	0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE	3, 5-9, 11-16, 18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT	↓	0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7	↓	CABLE SET, INTERCONN.	3, 5-9, 11-16	0102078	↓	2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4, 8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1		OITS	3, 5-9 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY	↓	0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3, 5-9, 11-16	0102102	(ECP 203) SA42 ↓	2900713-021	8102218	2900713-031
18.5	↓	PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8, 10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE, HANDLING, C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B	CP	6-APR-66	
W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
AC		REVISED PER TDRR30153	M.G.		21-JUL 66	
AD		REVISED PER TDRR 31045	JD	NS	20 SEP 66	
AE		REVISED PER TDRR 31533	ME		21 OCT 66	
AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
AH		REVISED PER TDRR 32121	S.S.	N.W.	13 DEC 66	
AJ		REVISED PER TDRR 32124	S.S.	N.W.	13 DEC 66	
AK		REVISED PER TDRR 33239		WH	28 MAR 67	
AL		REVISION STATUS CHANGED	DJW		26 APR 67	
AM		REVISION STATUS CHANGED	ES		[illegible]	
AN		REVISION STATUS CHANGED			23 AUG 67	
AP		REVISION STATUS CHANGED	DG		29 AUG 67	
AR		REVISION STATUS CHANGED	DG		30 AUG 67	
AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
AU		REVISION STATUS CHANGED			8 JAN 68	
AV		REVISED PER TDRR 35569	JRK		14 FEB 68	
AW		REVISED PER TDRR 35631	LK		20 FEB 68	
AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
BA		REVISED PER TDRR 36008	JJ		4 APR 68	
BB		REVISION STATUS CHANGED	JJ		4 SEP 68	
BC		REVISION STATUS CHANGED	JJ		5 SEP 68	
BD		REVISION STATUS CHANGED	SA		11 FEB 69	
BE		REVISION STATUS CHANGED	B.		16-APR-69	
BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	
BH		REVISION STATUS CHANGED	JJ	CP	10 SEP 70	

BH

1021201

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT A. C. METZGER 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET-BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT - PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJN
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	
AU		REVISION STATUS CHANGED		8 JAN 68	
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISION STATUS CHANGED		4 MAR 68	DL JAC
AZ		REVISION STATUS CHANGED		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJJ
BD		REVISION STATUS CHANGED		11 FEB 69	SA
BE		REVISION STATUS CHANGED		16 APR 69	B.
BF		REVISION STATUS CHANGED		24 SEP 69	M.G. CP
BG		REVISION STATUS CHANGED		17 JUN 70	M.G. CP
BH		REVISION STATUS CHANGED		10 SEP 70	JJJ CP

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APPLICATION

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AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULIK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 MIT APPROVAL W. KUPFER

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D | CODE IDENT NO. 99974 | 1021201
SCALE — | SHEET 3 OF 4

1021201 BH

MIL 1077 D-R

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4,6,8, 10-14,16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPFRATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC.CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8,10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11&12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3,5-9, 11-16,18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051
44.0	RETROFIT KIT FOR BREAKOUT BOX AND ADAPTER CABLE SET (CABLE ASSY W-563)	BREAKOUT BOX AND ADAPTER CABLE SET	1-5	0102159	ECP 770	2901075-021	8102304	2901075-031
45.0	RETROFIT KIT-PSA ADAPTER MODULE (BLOCK II)	PSA ADAPTER MODULE	1-8	0102160	ECP 794	2901143-021	8102305	2901143-031
46.0	RETROFIT KIT-COOLANT FLUID JUMPER BY-PASS ASSY	JUMPER BY-PASS ASSY COOLANT FLUID BLOCK II	1-10	-	ECP 818	1021616-000	8102307	1021616-011
47.0	RETROFIT KIT FOR COOLANT SUPPLY ASSEMBLY	COOLANT SUPPLY ASSEMBLY	16,506	-	ECP821-R1	1902133-021	8102309	1902133-031
47.1	RETROFIT KIT FOR G&N COOLANT AND POWER CONSOLE	G&N COOLANT AND POWER CONSOLE	13,3,21,7, 10,15,18, 20,24	-	ECP821-R1	1902134-031	8102308	1902134-041
47.2	RETROFIT KIT FOR GSE COOLANT INTERCONNECT HOSE ASSEMBLY SET	HOSE ASSEMBLY SET GSE COOLANT INTERCONNECT	9 UNITS	—	ECP821-R1	2900405-011	8102306	2900405-021

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
AS		THIS SHEET ADDED PER TDRR 34659		23 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MTY
AU		REVISED PER TDRR 35304		8 JAN 68	E
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
BD		REVISED PER TDRR 37308		11 FEB 69	SA
BE		REVISED PER TDRR 37505		16-APR-69	B.
BF		REVISED PER TDRR 37821		24 SEP 69	M.G. CP
BG		REVISED PER TDRR 38162		17 JUN 70	M.G. CP
BH		REVISED PER TDRR 38204		10 SEP 70	JJJ CP

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NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
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3 PLACE DECIMALS + −
ANGLES + −
DO NOT SCALE THIS DRAWING
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APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER 3 NOV 65
MIT APPROVAL W. KUPFER

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 4 OF 4

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	ECP 172	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N	7 KITS	0102049		1901876-011	8102130	2900405-011
9.9		155/055	11 KITS	0102049		1901875-011	8102132	2900405-011
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	11 & 12	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W103)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF SHOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	SA-76	—	8102159	—
13.1		OITS	3,5-9 11-16,18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB	1-19	0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE	3,5-9, 11-16,18-24	0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	6900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3,5-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	SA-42	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	5 KITS	0102085	ECP 270	1901846-031 1901846-021	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	4,8-13	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	SA-42		8102157	
18.1		OITS	3,5-9 11-16,18-24	0102107		2900022-021	8102196	2900022-031
18.1.1		OIA		0102106		2900023-021	8102198	2900023-031
18.1.2		GDB		0102103		2900024-021	8102197	2900024-031
18.1.3		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.2		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.3		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.4		CABLE SET, INTERCONNECT	3,5-9,11-16	0102102	(ECP 203) SA42	2900713-021	8102218	2900713-031
18.5		PTA/PEA MOUNTING FIXTURE	1-18	0102086	MARRIAGE KIT-2-CHG	2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS.	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041
20.0	RETROFIT KIT FOR BLOCK II/LEM COMPATABILITY	ICTC	1-14	0102111	ECP 172	1900342-021	8102204	1900342-031
21.0	RETROFIT KIT FOR CABLE ASSEMBLY - ELECTRICAL W103	CABLE ASSEMBLY - ELECTRICAL W103	1 THRU 9	0102109	ECP 172	1901520	8102237	1902625
22.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102113	ECP 384	1902431-021	8102245	1902431-041
23.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N MOUNTING FIXTURE	2-8, 10	0102112	ECP 270	1902204-011 OR 2900067-021	8102243	1902204-021 OR 2900067-031
23.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	COVER SET, ELECTRICAL CONNECTOR	1-7	0102125	ECP 430	1902430-011	8102261	1902430-021
24.0	RETROFIT KIT LIST FOR ECP 269	PSA EXTENDER SET	8,10-17	0102114	ECP 269	1900805-011	8102244	1900805-021
25.0	RETROFIT KIT FOR IMU MTG FIXTURE	IMU MTG. FIXTURE.	1-18	0102126	ECP 359	2900000-011	8102263	2900000-021
26.0	RETROFIT KIT FOR: FIXTURE HANDLING C/M & LEM CDU ASSY.	FIXTURE, HANDLING, C/M & LEM CDU ASSY	1-13	0102128	ECP 388R1	2900999-011	8102267	2900999-021
27.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	3-6	0102127	ECP0300	1902431-041	8102264	1902431-051

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
Ⓜ	L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
Ⓜ	M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ	N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ	P		REVISED PER TDRR 25338	JN		21-JAN 66	
	R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
	S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ	T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
Ⓜ	U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
	V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ	W		REVISED PER TDRR 28594	R.W.T.		13 MAY 66	
Ⓜ	Y		REVISED PER TDRR 29000	RLP		24 MAY 66	
Ⓜ	Z		REVISED PER TDRR 29232	JMP		7 JUN 66	
	AA		REVISED PER TDRR 29994	RWH		14 JUL 66	
Ⓜ	AB		REVISED PER TDRR 30101	J.K.	JAC	15 JUL 66	
Ⓜ	AC		REVISED PER TDRR 30153	M.G.		21-JUL 66	
Ⓜ	AD		REVISED PER TDRR 31045	JD.	NS	20 SEP 66	
	AE		REVISED PER TDRR 31533	ME		21 OCT 66	
Ⓜ	AF		REVISED PER TDRR 31623	J.C	RLW	26 OCT 66	
	AG		REVISED PER TDRR 32113	S.S.	N.W.	13 DEC 66	
	AH		REVISED PER TDRR 32121	S.S	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	S.S	N.W	13 DEC 66	
	AK		REVISED PER TDRR 33239		WH	28 MAR 67	
Ⓜ	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ	AM		REVISION STATUS CHANGED	ES		2 AUG 67	
	AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ	AU		REVISION STATUS CHANGED			8 JAN 68	
	AV		REVISED PER TDRR 35569	JRK		14 FEB 68	
	AW		REVISED PER TDRR 35631	LK		20 FEB 68	
Ⓜ	AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
	AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
Ⓜ	BA		REVISED PER TDRR 36008	JJJ		4 APR 68	
	BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
Ⓜ	BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
Ⓜ	BD		REVISION STATUS CHANGED	SA		11 FEB 69	
Ⓜ	BE		REVISION STATUS CHANGED	B.		16-APR-69	
Ⓜ	BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
Ⓜ	BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	
Ⓜ	BH		REVISION STATUS CHANGED	JJJ	CP	10 SEP 70	
	BJ		REVISION STATUS CHANGED	DKD	CP	25 NOV 70	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN F.P. 10-28-65
CHECKED 11-3-65
APPROVED
APPROVED C.A. Olson 11-3-65
APPROVED MIT W. Gryfer 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 4

1021201 BJ

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET- BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET- BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET- LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET- BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET- BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET- BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET- LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
		COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	SEE BELOW			ECP-0529		8102280	
29.1		C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4 29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.	INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031 2900712-041	8102279	2900712-051 2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT- CONSOLE, CAL & TEST ASSY- SCM/PSAAM	CONSOLE, CAL & TEST ASSY- SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT- PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
AL		REVISED PER TDRR 33559		26 APR 67	DJW
AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
AR		REVISED PER TDRR 34412		30 AUG 67	DG
AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	
AU		REVISION STATUS CHANGED		8 JAN 68	
AV		REVISION STATUS CHANGED		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISION STATUS CHANGED		4 MAR 68	DL
AZ		REVISION STATUS CHANGED		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
BC		REVISION STATUS CHANGED		5 SEP 68	JJJ
BD		REVISION STATUS CHANGED		11 FEB 69	SA
BE		REVISION STATUS CHANGED		16 APR -69	B.
BF		REVISION STATUS CHANGED		24 SEP 69	M.G. CP
BG		REVISION STATUS CHANGED		17 JUN 70	M.G. CP
BH		REVISION STATUS CHANGED		10 SEP 70	JJJ CP
BJ		REVISION STATUS CHANGED		25 NOV 70	DKD CP

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 W. KUPFER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 BJ

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	11 & 12	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	1-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
~~6.1~~	~~MARRIAGE CHANGES~~	~~G & N MOUNTING FIXTURE~~	~~7-9~~	~~0102011~~	~~NECP A-32~~	~~1900014-011~~	~~8102015~~	~~1900014-011~~
6.2	MARRIAGE CHANGES	REMOTE OPTICS CONTROLLER	6-8	0102010	NECP A-32	1900491-011	8102006	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——	↓	——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	1900004-021	3102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	1-8	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	(ECP 172) NECP A-31	1900866-011	8102098	1901876-011
8.3	↓	↓		↓	↓	1900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	1900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	1900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	NECP A-31	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	(ECP 61) NECP A-31	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	1900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	1901308	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-14	0102015	↓	1900931-011	8102044	1901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-17	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	(ECP 172) NECP A-31	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL	1-5	0102017	NECP A-31	1900797-011	8102057	1900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102019	(ECP 60) NECP A-31	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL	2-10	0102016	(ECP 59) NECP A31	1900342-011	8102062	1900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-9	0102029	(ECP 62) NECP A31	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-12	0102027	(ECP 172) NECP A31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	——	——	——	NECP A-31	——	8102133	——
8.17.1	↓	G & N MOUNTING FIXTURE	5 KITS	0102058	↓	1902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER	↓	0102051	↓	1902046-011	8102136	1902046-011
8.17.3	↓	OPTICS/NAV. BASE MTG. FIXTURE	↓	0102057	↓	1902301-011	8102140	1902301-011
8.17.4.0	↓	OITS	↓	——	↓	1902300-011	8102143	1902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER	↓	——	↓	1901976-011	8102142	1901976-011
8.17.4.2	↓	INTERCONN. CABLE SET	↓	——	↓	1902299	8102146	1902299
8.17.4.3	↓	GSE J-BOX OVERHEAD	↓	0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER	↓	0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	↓	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	——	——	SA 42	——	8102100	——
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3,5-9,11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3,5-9,11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE	3,5-9,11-16	0102041	ECP 172	1902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET INTERCONNECT	1,3-7,9-14	0102055	(ECP 203) SA-42	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT. CART	2-12	0102067	SA-42	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	1900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-8, 10	0102087	↓	1902204-011 1902204-021	8102112	2900067-021 2900067-031
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	ECP 75	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER		0102046	ECP 172	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJJ	CP	11-8-65	
Ⓜ	L		REVISION STATUS CHANGED	JJJ	CP	10 NOV 65	
Ⓜ	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ	P		REVISION STATUS CHANGED	JM	PZ	21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	DKD		17 FEB 66	
Ⓜ	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
Ⓜ	U		REVISION STATUS CHANGED	JHP	PZ	24 FEB 66	
Ⓜ	V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
Ⓜ	W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Ⓜ	Y		REVISION STATUS CHANGED	KLP		[illegible] 66	
Ⓜ	Z		REVISION STATUS CHANGED	JMP		7 JUN 66	
	AA		REVISION STATUS CHANGED	RWH		14 JUL 66	
Ⓜ	AB		REVISION STATUS CHANGED	J.K	JAC	15 JUL 66	
Ⓜ	AC		REVISION STATUS CHANGED			21 JUL 66	
Ⓜ	AD		REVISION STATUS CHANGED	JD	NS	20 SEP 66	
	AE		REVISION STATUS CHANGED	ME		21 OCT 66	
Ⓜ	AF		REVISION STATUS CHANGED	JC		26 OCT 66	
	AG		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
	AH		REVISION STATUS CHANGED	SS	N.W.	13 DEC 66	
Ⓜ	AJ		REVISED PER TDRR 32124	SS	N.W.	13 DEC 66	
	AK		REVISION STATUS CHANGED	Rw.	WH	28 MAR 67	
Ⓜ	AL		REVISION STATUS CHANGED	DJW		26 APR 67	
Ⓜ	AM		REVISION STATUS CHANGED	ES	KM	2 AUG 67	
	AN		REVISION STATUS CHANGED	TJC		23 AUG 67	
	AP		REVISION STATUS CHANGED	DG		29 AUG 67	
Ⓜ	AR		REVISION STATUS CHANGED	DG		30 AUG 67	
Ⓜ	AS		REVISED PER TDRR 34659	PHG		28 SEP 67	
	AT		REVISION STATUS CHANGED	MTY		28 DEC 67	
Ⓜ	AU		REVISION STATUS CHANGED			8 JAN 68	
	AV		REVISION STATUS CHANGED	JRK		14 FEB 68	
	AW		REVISED PER TDRR 35631	LK		20 FEB 68	
Ⓜ	AY		REVISION STATUS CHANGED	DL	JAC	4 MAR 68	
	AZ		REVISION STATUS CHANGED	PHG		1 APR 68	
Ⓜ	BA		REVISED PER TDRR 36008	JJJ		1 APR 68	
	BB		REVISION STATUS CHANGED	JJJ		4 SEP 68	
Ⓜ	BC		REVISION STATUS CHANGED	JJJ		5 SEP 68	
Ⓜ	BD		REVISION STATUS CHANGED	SA		11 FEB 69	
Ⓜ	BE		REVISION STATUS CHANGED	B.		16 APR 69	
Ⓜ	BF		REVISION STATUS CHANGED	M.G.	CP	24 SEP 69	
Ⓜ	BG		REVISION STATUS CHANGED	M.G.	CP	17 JUN 70	
Ⓜ	BH		REVISION STATUS CHANGED	JJJ	CP	10 SEP 70	
	BJ		REVISION STATUS CHANGED	DKD	CP	25 NOV 70	
	BK		REVISION STATUS CHANGED	RP	J.E.G.	30 NOV 70	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN F.P. Gruss 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
A. L. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 4

1021201 BK

ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB.	AUTH.	P/N TO BE MODIFIED	RFK NO.	NEW P/N
28.0	GSE MARRIAGE KIT 3 CHGS.	SEE BELOW	--	--	SA 42	---	8102158	--
28.1		OITS	3, 5-9, 11-16, 18-24	0102120		2900022-031	8102247	2900022-041
28.1.1		OIA		0102119		2900023-031	8102251	2900023-041
28.1.2		INT. CABLE SET-BASIC		0102133		2900025-031	8102275	2900025-031
28.2		PSA/TPA	1-19	0102121		2900037-021	8102255	2900037-031
~~28.3~~		~~INT CABLE SET-BLK II~~	~~1-12~~	~~0102122~~		~~2900712-031~~	~~8102258~~	~~2900712-041~~
28.4		INT CABLE SET-BLK I SER 100	3-5, 7-9, 11-16	0102117		2900713-031	8102248	2900713-041
28.5		INT CABLE SET-LEM	1-13	0102118		6900043-031	8102249	6900043-041
28.6		PORT TEMP CONTROL	1-4, 6, 8, 10-14, 16-21	0102115		2900060-011	8102250	2900060-021
28.7		LIFTING TEMP CONTROL	1-4	0102129		2900063-011	8102246	2900063-021
28.8		SCM/PSAAM TEST & CAL CONSOLE	1-4	0102130		2900895-011	8102266	2900895-021
28.9		ADAPTER CABLE SET-BLK I SER 100	1-2	0102133		1902545-011	8102272	1902545-011
~~28.10~~		~~ADAPTER CABLE SET-BLK II~~	~~1-4~~	~~0102133~~		~~2901076-011~~	~~8102273~~	~~2901076-011~~
28.11		B.O. BOX & ADAPTER CABLE SET-BASIC	1-5	0102133		2901075-011	8102274	2901075-011
28.12		ADAPTER CABLE SET-LEM	1-4	0102133		6900077-011	8102276	6900077-011
28.13		COVER SET, ELECTRICAL CONNECTOR	1-22	0102132	SA 42	2900065-011	8102336	2900065-021
	GSE MARRIAGE KIT3 CHGS	COVER SET, ELECTRICAL CONNECTOR	1-22			6900001-011		6900001-021
28.3	(MARRIAGE KIT 3)	INT. CABLE SET BLK II	1-12	0102122	SA 42	2900712-051 2900712-031	8102258	2900712-061 2900712-041
28.10	(MARRIAGE KIT 3)	ADAPT. CABLE SET BLK II	1-4	0102133	SA 42	2901076-021 2901076-011	8102273	2901076-021 2901076-011
29.0	JACKSCREW SHORTENING COMPATIBILITY WITH	SEE BELOW			ECP-0529		8102280	
29.1	A/B PSA MOISTURE SEALING MODIF.	C/M HANDLING FIXTURE	1-13	0102136		2900998-011	8102278	2900998-021
29.2		G&N MTG. FIX. BLK II	2-8, 10	0102135		2900067-031	8102277	2900067-041
29.3		ADAPTER CABLE SET BLK II	1-4	0102137		2901076-011	8102283	2901076-021
29.4		INT. CABLE SET BLK II	1-12	0102138	ECP-0529	2900712-031	8102279	2900712-051
29.4.1	JACKSCREW SHORTENING COMPATIBILITY WITH A/B PSA MOISTURE SEALING MODIF.					2900712-041		2900712-061
30.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102139	ECP-0522	6900088-011	8102281	6900088-021
30.1	RETROFIT KIT-CONSOLE, CAL & TEST ASSY-SCM/PSAAM	CONSOLE, CAL & TEST ASSY-SCM/PSAAM	1-4	0102140	ECP-0522	2900895-021	8102284	2900895-031
30.2	RETROFIT KIT-PSA ADAPTER MODULE (BLK II)	PSA ADAPTER MODULE	1-8	0102143	ECP-0522	2901143-011	8102285	2901143-021
31.0	RETROFIT KIT FOR COVER, APOLLO OPTICAL TELESCOPE	COVER, APOLLO OPTICAL TELESCOPE	1, 2	0102141	ECP-548	1902651-011	8102282	1902651-021
32.0	ADJUST CHARGING RATE	INERTIAL COMPONENTS TEMPERATURE CONTROLLER	1-14	0102145	ECP 0547	1900342-031	8102290	1900342-041
32.1	ADJUST CHARGING RATE	AUXILIARY BATTERY PACK	1-2	0102146	ECP 0547	1901492-021	8102289	1901492-031
33.0	RETROFIT KIT-PSA ADAPTER MODULE (LEM)	PSA ADAPTER MODULE	1-7	0102144	ECP-0577F	6900088-021	8102287	6900088-031

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
Ⓜ AJ		REVISED PER TDRR 32124		13 DEC 66	SS N.W.
AK		REVISED PER TDRR 33239		29 MAR 67	
Ⓜ AL		REVISED PER TDRR 33559		26 APR 67	DJW
Ⓜ AM		REVISED PER TDRR 34009		2 AUG 67	ES
AN		REVISED PER TDRR 34295		23 AUG 67	TJC
AP		REVISED PER TDRR 34396		29 AUG 67	DG
Ⓜ AR		REVISED PER TDRR 34412		30 AUG 67	DG
Ⓜ AS		REVISED PER TDRR 34659		28 SEP 67	PHG
AT		REVISION STATUS CHANGED		28 DEC 67	WTY
Ⓜ AU		REVISION STATUS CHANGED		8 JAN 68	
AV		REVISION STATUS CHANGED		14 FEB 68	JPK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
Ⓜ AY		REVISION STATUS CHANGED		MAR 68	JAC
AZ		REVISION STATUS CHANGED		1 APR 68	PHG
Ⓜ BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISION STATUS CHANGED		4 SEP 68	JJJ
Ⓜ BC		REVISION STATUS CHANGED		5 SEP 68	JJJ
Ⓜ BD		REVISION STATUS CHANGED		11 FEB 69	SA
Ⓜ BE		REVISION STATUS CHANGED		16 APR -69	B.
Ⓜ BF		REVISION STATUS CHANGED		24 SEP 69	M.G. CP
Ⓜ BG		REVISION STATUS CHANGED		17 JUN 70	M.G. CP
Ⓜ BH		REVISION STATUS CHANGED		10 SEP 70	JJJ CP
BJ		REVISION STATUS CHANGED		25 NOV 70	DKD CP
BK		REVISION STATUS CHANGED		30 NOV 70	RP J.E.G.

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN F.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER
3 NOV 65 W. KUPFER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

SIZE D
CODE IDENT NO. 99974
1021201
SCALE —
SHEET 3 OF 4

1021201 BK

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ITEM NO.	DESCRIPTION	END ITEM	S/N	RIB NO.	AUTH	P/N TO BE MODIFIED	RFK NO.	NEW PART NO.
34.0	RETROFIT KIT FOR CABLE ASSY-ELECT W-163	CABLE ASSY-ELECT W-163	1-12	0102147	ECP 0581	2900712-061	8102291	2900712-071
35.0	CHARGING VOLTAGE CUTOFF ADJ	PORTABLE TEMPERATURE CONTROLLER	1-4,6,8, 10-14,16-21	0102150	ECP-0595	2900060-021	8102295	2900060-031
35.1	CHARGING VOLTAGE CUTOFF ADJ	LIFTING TEMPERATURE CONTROLLER	1-4	0102149	ECP-0595	2900063-021	8102294	2900063-031
36.0	RETROFIT KIT - CONSOLE, CALIBRATION AND TEST ASSEMBLY - SCM/PSAAM (2900895-031)	CONSOLE, CALIBRATION AND TEST ASSEMBLY	1-4	0102154	ECP-0672	2900895-031	8102296	2900895-041
37.0	COVER SET, ELEC. CONN	COVER SET ELEC. CONN	1-22	0102152	ECP-661	6900001-021	8102288	6900001-031
38.0	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	2-8,10	0102151	ECP-654	2900067-041	8102292	2900067-051
38.1	RETROFIT KIT FIXTURE MOUNTING G&N	FIXTURE MOUNTING G&N	11 & 12	0102155	ECP-529 ECP-654	2900067-011	8102277 8102297	2900067-061
39.0	GSE NOISE REDUCTION	INT. CABLE SET, LEM	1-13	0102148	ECP-647	6900043-041	8102293	6900043-051
40.0	RETROFIT KIT-BREAKOUT BOX CABLE ADAPTER	BREAKOUT BOX CABLE ADAPTER	1-5	0102156	ECP-691	2901011-011	8102298	2901011-021
41.0	BACKUP POWER FOR PTC II	AUXILIARY BATTERY PACK	1-2	0102153	ECP-0570	1901492-031	8102299	1901492-041
42.0	RETROFIT KIT ANALYZER OPTICS INERTIAL	ANALYZER OPTICS INERTIAL	3,5-9, 11-16,18-24	0102157	ECP-705	2900023-041	8102301	2900023-051
43.0	FUSE CHANGE	AUXILIARY BATTERY PACK	1-2	0102158	ECP 748	1901492-041	8102303	1901492-051
43.1	FUSE CHANGE IN BPP	ICTC	1-14			1900342-041	8102302	1900342-051
44.0	RETROFIT KIT FOR BREAKOUT BOX AND ADAPTER CABLE SET (CABLE ASSY W-563)	BREAKOUT BOX AND ADAPTER CABLE SET	1-5	0102159	ECP 770	2901075-021	8102304	2901075-031
45.0	RETROFIT KIT-PSA ADAPTER MODULE (BLOCK II)	PSA ADAPTER MODULE	1-8	0102160	ECP 794	2901143-021	8102305	2901143-031
46.0	RETROFIT KIT-COOLANT FLUID JUMPER BY-PASS ASSY	JUMPER BY-PASS ASSY COOLANT FLUID BLOCK II	1-10	–	ECP 818	1021616-000	8102307	1021616-011
47.0	RETROFIT KIT FOR COOLANT SUPPLY ASSEMBLY	COOLANT SUPPLY ASSEMBLY	16,506	–	ECP821-R1	1902133-021	8102309	1902133-031
47.1	RETROFIT KIT FOR G&N COOLANT AND POWER CONSOLE	G&N COOLANT AND POWER CONSOLE	13,3,21,7, 10,15,18, 20,24	–	ECP821-R1	1902134-031	8102308	1902134-041
47.2	RETROFIT KIT FOR GSE COOLANT INTER-CONNECT HOSE ASSEMBLY SET	HOSE ASSEMBLY SET GSE COOLANT INTERCONNECT	9 UNITS	—	ECP821-R1	2900405-011	8102306	2900405-021
48.0	ACCOMODATE LUNAR SAMPLE BOX	PSA ADAPTER MODULE	1-7	0102161	ECP-1014	6900088-031	8102310	6900088-041
49.0	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL-W183	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL-W183	3 & 4	—	ECP-1016	2901677	—	2901682-011
50.0	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL-W184	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL-W184	3 & 4	—	ECP-1016	2901678	—	2901683-011

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
AS		THIS SHEET ADDED PER TDRR 34659		28 SEP 67	PHG
AT		REVISED PER TDRR 35290		28 DEC 67	MTY
AU		REVISED PER TDRR 35304		8 JAN 68	TE
AV		REVISED PER TDRR 35569		14 FEB 68	JRK
AW		REVISED PER TDRR 35631		20 FEB 68	LK
AY		REVISED PER TDRR 35636		4 MAR 68	DL JAC
AZ		REVISED PER TDRR 35974		1 APR 68	PHG
BA		REVISED PER TDRR 36008		4 APR 68	JJJ
BB		REVISED PER TDRR 36746		4 SEP 68	JJJ
BC		REVISED PER TDRR 36754		5 SEP 68	JJJ
BD		REVISED PER TDRR 37308		11 FEB 69	SA
BE		REVISED PER TDRR 37505		16-APR-69	B.
BF		REVISED PER TDRR 37821		24 SEP 69	M.G. CP
BG		REVISED PER TDRR 38162		17 JUN 70	M.G. CP
BH		REVISED PER TDRR 38204		10 SEP 70	JJJ CP
BJ		REVISED PER TDRR 38286		25 NOV 70	DKD CP
BK		REVISED PER TDRR 38289		30 NOV 70	PP J.E.G.

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN E.P. GRASSO DATE 10-28-65
CHECKED E.A. PULEK 11-2-65
APPROVAL E.A. OLSSON 11-3-65
CONTRACT
NASA APPROVAL A.C. METZGER 3 NOV 65
MIT APPROVAL W. KUPFER

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

SIZE D CODE IDENT NO. 99974 1021201
SCALE — SHEET 4 OF 4

BK 1021201

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
(M) L		REVISION STATUS CHANGED	JJ	CP	18 NOV 65	
M		REVISED PER TDRR 24431	RP		3 DEC 65	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2	↓	REMOTE OPTICS CONTROLLER	6-8	0102010	↓	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——	↓	——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	1900004-021	8102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-7	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	↓	1900866-011	8102098	1901876-011
8.3	↓	↓		↓	↓	1900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	1900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	1900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	1900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	1901308	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-3, 5-14	0102015	↓	1900931-011	8102044	1901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-14	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	↓	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102018	ECP-60	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-8	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	——	——	——	↓	——	8102133	——
8.17.1	↓	G & N MOUNTING FIXTURE		0102058	↓	1902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER		0102051	↓	1902046-011	8102136	1902046-011
8.17.3	↓	OPTICS/NAV. BASE MTG. FIXTURE		0102057	↓	1902301-011	8102140	1902301-011
8.17.4.0	↓	OITS		——	↓	1902300-011	8102143	1902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER		——	↓	1901976-011	8102142	1901976-011
8.17.4.2	↓	INTERCONN. CABLE SET		——	↓	1902299	8102146	1902299
8.17.4.3	↓	GSE J-BOX OVERHEAD		0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER		0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX		0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	——	——	NAS 9-497, SA42	——	8102100	——
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE		0102041	↓	1902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET, INTERCONNECT	1-7, 9-14	0102055	↓	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT. CART	2-10		↓	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	1900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-7	0102058	↓	1902204-011	8102112	1900067-021
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	↓	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 3 Dec 65
A. C. METZGER
APPROVED MSC DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	- 1021201

SCALE ——— SHEET 1 OF 2

PART NUMBER	PART NAME
1021202	RETROFIT KIT FOR: NECP-AL

REVISIONS TDRR 08232 MAY 1

Ⓜ

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	REVISED PER TDRR 10403	—	6 JULY 64	JHR AU

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08232 **DATE** 5/12/64

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ + +
- - -
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MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET

MIL 10778-P

1021201 B

PART NUMBER	PART NAME
1021202	RETROFIT KIT FOR: NECP-A1
1901893	RETROFIT KIT FOR NECP A15

REVISIONS TDRR 08232 MAY 12 1964

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	REVISED PER TDRR 10403	—	6 JULY 64	JHR AU
B	REVISED PER TDRR 12827	-	30 SEP 64	JHR

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08232 **DATE** 5/12/64

NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS + − ANGLES + −
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CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
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APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 10778-F

1021201 C

PART NUMBER	PART NAME
1021202	RETROFIT KIT FOR: NECP-A1
1901893	RETROFIT KIT FOR NECP A15
1021243	RETROFIT KIT FOR NECP-A8 (PHASE SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8 (OSCILLOGRAPH CONSOLE 1900000-011)

REVISIONS TDRR 08232 MAY 14 '64

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	REVISED PER TDRR 10403	—	6 JULY 64	JHP AU
B	REVISED PER TDRR 12827	–	30 SEP 64	JHP
C	REVISED PER TDRR 13809	–	27 OCT 64	JJJ

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08232 DATE 5/12/64

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS + − ANGLES + −
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CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 10778-P

PART NUMBER	PART NAME
~~1021202~~	~~RETROFIT KIT FOR NECP-A1~~
1901893	RETROFIT KIT FOR NECP A15
1021243	RETROFIT KIT FOR NECP-A8 (PHASE SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8 (OSCILLOGRAPH CONSOLE 1900000-011)

REVISIONS TDRR 08232 MAY 1

	SYM	DESCRIPTION	CHG NO.	DATE	APPD.
Ⓜ	A	REVISED PER TDRR 10403	—	6 JULY 64	JHR / AU
Ⓜ	B	REVISED PER TDRR 12827	–	30 SEP 64	JHR / DAH
Ⓜ	C	REVISED PER TDRR 13809	–	27 OCT 64	JJJ / DAH
	D	REVISED PER TDRR 14160	-	18 NOV 64	JJJ / EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08232 **DATE** 5/12/64

NEXT ASSY	USED ON

APPLICATION

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TOLERANCES ON
FRACTIONS DECIMALS ANGLES
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MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 1077B-P

PART NUMBER	PART NAME
~~1021202~~	~~RETROFIT KIT FOR: NECP A1~~
1901893	RETROFIT KIT FOR NECP A15
1021243	RETROFIT KIT FOR NECP-A8 (PHASE SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8 (OSCILLOGRAPH CONSOLE 1900000-011)
8102058	RETROFIT KIT FOR: NECP A-34

REVISIONS TDRR 08232 MAY 1 '64

	SYM	DESCRIPTION	CHG NO.	DATE	APPD.
(M)	A	REVISED PER TDRR 10403	—	6 JULY 64	JHR / AU
(M)	B	REVISED PER TDRR 12827	–	30 SEP 64	JHR
(M)	C	REVISED PER TDRR 13809	–	27 OCT 64	JJJ
(M)	D	REVISED PER TDRR 14160	–	18 NOV 64	JJJ / EF
	E	REVISED PER TDRR 14864		18 DEC 64	JJJ

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08232 **DATE** 5/12/64

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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FRACTIONS + – DECIMALS + – ANGLES + –
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CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 10778-P

PART NUMBER	PART NAME
~~1C21202~~	~~RETROFIT KIT FOR: NECP A1~~
1901893	RETROFIT KIT FOR NECP A15
1C21243	RETROFIT KIT FOR NECP-A8 (PHASE
	SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8 (OSCILLO-
	GRAPH CONSOLE 1900000-011)
8102058	RETROFIT KIT FOR: NECP A-34
8102072	RETROFIT KIT FOR: ECP-12 TRANSPORT-
	ATION CART FOR G&N ASSY (1900009-011)

REVISIONS TDRR 08232 MAY 1 6 64

	SYM	DESCRIPTION	CHG NO.	DATE	APPD.
Ⓜ	A	REVISED PER TDRR 10403	—	6 JULY 64	JHR AU
Ⓜ	B	REVISED PER TDRR 12827	—	30 SEP 64	JHR DKH
Ⓜ	C	REVISED PER TDRR 13809	—	27 OCT 64	JJJ DKH
Ⓜ	D	REVISED PER TDRR 14160	—	18 NOV 64	JJJ EF
Ⓜ	E	REVISED PER TDRR 14864		18 DEC 64	JJJ DKH
	F	REVISED AND UPGRADED TO CLASS A PER TDRR 16132		10 FEB 65	Joh EF

NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
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CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO. | SIZE B | 1021201
SCALE | SHEET 1 of 1

MIL 1077B—P

1021201 G

PART NUMBER	PART NAME
~~1021202~~	~~RETROFIT KIT FOR: NECP A1~~
1901893	RETROFIT KIT FOR NECP A15
1021243	RETROFIT KIT FOR NECP-A8 (PHASE SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8 (OSCILLOGRAPH CONSOLE 1900000-011)
8102058	RETROFIT KIT FOR: NECP A-34
8102072	RETROFIT KIT FOR: ECP-12 TRANSPORTATION CART FOR G&N ASSY (1900009-011)
8102003	MASTER RETROFIT KIT FOR NECP-A32

REVISIONS TDRR 08232 MAY 12 '64

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	REVISED PER TDRR 10403	—	6 JULY 64	JHE AU
B	REVISED PER TDRR 12827	–	30 SEP 64	JHE
C	REVISED PER TDRR 13809	–	27 OCT 64	JJJ
D	REVISED PER TDRR 14160	–	18 NOV 64	JJJ EF
E	REVISED PER TDRR 14864		18 DEC 64	JJJ
F	REVISED AND UPGRADED TO CLASS A PER TDRR 16132		10 FEB 65	EF
G	REVISED PER TDRR 16465	–	19-FEB 65	GM EF

NEXT ASSY	USED ON
APPLICATION	

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AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 10778-F

H 1021201

REVISIONS TDRR 08232 MAY 1				
SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	REVISED PER TDRR 10403	—	6 JULY 64	JHR AU
B	REVISED PER TDRR 12827	—	30 SEP 64	JHR
C	REVISED PER TDRR 13809	—	27 OCT 64	JJJ
D	REVISED PER TDRR 14160	-	18 NOV 64	JJJ EF
E	REVISED PER TDRR 14864		18 DEC 64	JJJ
F	REVISED AND UPGRADED TO CLASS A PER TDRR 16132		10 FEB 65	EF
G	REVISED PER TDRR 16465	—	19-FEB 65	GM EF
H	REVISED PER TDRR 17670		23 MAR 65	JHR EF

PART NUMBER	PART NAME
~~1021202~~	~~RETROFIT KIT FOR NECP-A1~~
1901893	RETROFIT KIT FOR NECP A15
1021243	RETROFIT KIT FOR NECP-A8 (PHASE SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8 (OSCILLOGRAPH CONSOLE 1900000-011)
8102058	RETROFIT KIT FOR: NECP A-34
8102072	RETROFIT KIT FOR: ECP-12 TRANSPORTATION CART FOR G&N ASSY (1900009-011)
8102003	MASTER RETROFIT KIT FOR NECP-A32
8102001	RETROFIT KIT FOR ECP-A-18 G&N MOUNTING FIXTURE (1900014-011)

NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
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CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/1/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 10778-P

1021201 J

PART NUMBER	PART NAME
~~1021202~~	~~RETROFIT KIT FOR: NECP-A1~~
1901893	RETROFIT KIT FOR NECP A15
1021243	RETROFIT KIT FOR NECP-A8 (PHASE SENSITIVE DEMOD. 1900068-011)
1021244	RETROFIT KIT FOR NECP-A8(OSCILLOGRAPH CONSOLE 1900000-011)
8102058	RETROFIT KIT FOR: NECP A-34
8102072	RETROFIT KIT FOR: ECP-12 TRANSPORTATION CART FOR G&N ASSY (1900009-011)
8102003	MASTER RETROFIT KIT FOR NECP-A32
8102001	RETROFIT KIT FOR ECP-A-18 G&N MOUNTING FIXTURE (1900014-011)
8102002	MASTER RETROFIT KIT FOR NECP-A31

REVISIONS TDRR 08232 MAY 1

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	REVISED PER TDRR 10403	—	6 JULY 64	JHR AU
B	REVISED PER TDRR 12827	–	30 SEP 64	JHR
C	REVISED PER TDRR 13809	–	27 OCT 64	JJJ
D	REVISED PER TDRR 14160	–	18 NOV 64	JJJ EF
E	REVISED PER TDRR 14864		18 DEC 64	JJJ
F	REVISED AND UPGRADED TO CLASS A PER TDRR 16132		10 FEB 65	EF
G	REVISED PER TDRR 16465	–	19-FEB 65	GM EF
H	REVISED PER TDRR 17670		23 MAR 65	JHR EF
J	REVISED PER TDRR 17869	-	30 MAR 65	JHR EF

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APPLICATION	

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NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

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MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET 1 of 1

MIL 10778-P

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REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K	—	REPLACES REV J WITH CHANGE PER TDRR 23726			11-8-65	

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-7	0102025	NECP A-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020		1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023		1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019		1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016		1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-8	0102029		1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027		1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE		0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX		0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET, INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN F.P. Young 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 11-4-65 A.C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. - 1021201
SCALE ——
SHEET 1 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23926			11-3-65	

ITEM NO.	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		↓ , ISS/OSS		0102049		1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

NEXT ASSY	USED ON
ND1000000	

APPLICATION

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO. 99974
SIZE D
DRAWING NO. - 1021201
SCALE
SHEET 2 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ PDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-7	0102025	NECP A-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I, 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I, 100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020		1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023		1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019		1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016		1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029		1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027		1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE		0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER		0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE		0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS		—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER		—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET		—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD		0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER		0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX		0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Davis 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED C A Olsen 11-3-65
APPROVED MIT W Kupfer A. C. METZGER 11/4/65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 2

1021201 L

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		↓ , 155/055		0102049		1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	810216	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1&2	0102053	↓	1902173	8102138	1902522

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. [illegible] 10-28-65
CHECKED [illegible] 11-2-65
APPROVED
APPROVED E.A. Olsen 11-3-65
APPROVED MIT W. Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 2 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
(M) L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED REFERENCE	RFK NO.	NEW P/N REFERENCE
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8	↓	HOSE SET, INTERCONN, G&N		0102049	↓	1901876-011	8102130	
9.9		↓ 155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1	↓	GSE/PSA J-BOX	1&2	0102052	↓	1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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ND1000000	

APPLICATION

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RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Dec 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 M

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		5 DEC 65	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
3		GSE J-BOX, OVERHEAD	3-14	0102002		1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0			3-14	1021263		1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A 32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3		GSE/PSA J-BOX	9-10	0102006		900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		900145-011	8102053	900145-011
6.4.3		INTERCONN. CABLE SET	8-12	0102009		1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I, 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I, 100 CAPABILITY	HOSE ASSY		0102028		900866-011	8102098	1901876-011
8.3						900867-011	8102098	
8.4						1901663-011	8102098	
8.5						900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7						1901663-021	8102099	
8.9		PURGE & FILL FIXTURE	1-5	0102024		1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		901308	8102013	1902299
8.11.3			1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017		1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16		G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5		GSE PSA J-BOX	1-14	0102064		1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6		REMOTE OPTICS CONTROLLER	1-9	0102046		1902046-011	8102123	1902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W. Wyler 3 Jan 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 2

1021201 N

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726		CP	11-3-65	
L		REVISED PER TDRR 23723		CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK I/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, 155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102136	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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NEXT ASSY	USED ON

APPLICATION

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CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F P [illegible] 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED A Olson 11-2-65
APPROVED MIT W Kupfer A. C. METZGER 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201

SCALE ---
SHEET 2 OF 2

1021201 N

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
Ⓜ L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
Ⓜ M		REVISED PER TDRR 24431	RVP		3 DEC 65	
Ⓜ N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JN		21 JAN 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G&N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN	F.P. Jones	10-28-65
CHECKED	E. Pulik	11-2-65
APPROVED		
APPROVED	E A Olson	11-3-65
APPROVED MIT	W Kupfer	3 Nov 65
APPROVED MSC	A. C. METZGER	DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201
SCALE ———		SHEET 1 OF 2

1021201 P

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, 155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021[illegible]6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1&2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE C&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
(M) L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
(M) M		REVISION STATUS CHANGED	RUP		3 DEC 65	
(M) N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JM		21-JAN 66	

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MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 2 OF 2

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
Ⓜ L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
Ⓜ M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ P		REVISION STATUS CHANGED	JM		21-JAN-66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——		——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	——	——	——		——	8102133	——
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS, NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	——		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	——		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	——		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	——	——	NAS 9-497, SA42	——	8102100	——
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED
APPROVED
APPROVED
APPROVED MIT
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO 1021201
SCALE ——
SHEET 1 OF 2

1021201 R

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	[illegible] CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10	↓	ROTARY TABLE ASSY	1-11	0102030	↓	1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR JSE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1&2	0102052		1901933-011	8102137	1901933-021
10.2	↓	I/50 CABLE (W109)	1&2	0102053	↓	1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25398	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MCM	15 FEB 66	

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NEXT ASSY	USED ON
ND1000000	

APPLICATION

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CAPACITOR VALUES ARE IN μf
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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN EPG 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED C A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 R

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2	↓	REMOTE OPTICS CONTROLLER	6-8	0102010	↓	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS PART OF NECP A-32	SEE BELOW	—	—	↓	—	8102019	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	900004-021	8102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	900145-011	8102053	900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901303-011	8102012	1901303-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I, 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900263-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	↓	900866-011	8102093	1901876-011
8.3	↓	↓		↓	↓	900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	901303	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-3, 5-14	0102015	↓	1900931-011	8102044	901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-14	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	↓	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	↓	—	8102133	—
8.17.1	↓	G & N MOUNTING FIXTURE	2-9	0102058	↓	902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER	1-9	0102051	↓	1902046-011	8102136	902046-011
8.17.3	↓	OPTICS, NAV. BASE MTG. FIXTURE	2-9	0102057	↓	902301-011	8102140	902301-011
8.17.4.0	↓	OITS	3-17	—	↓	1902300-011	8102143	902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER	3-17	—	↓	1901976-011	8102142	901976-011
8.17.4.2	↓	INTERCONN. CABLE SET	3-17	—	↓	1902299	8102146	902299
8.17.4.3	↓	GSE J-BOX OVERHEAD	3-17	0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER	2,3 & 5-17	0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE		0102041	↓	902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET INTERCONNECT	1-7, 9-14	0102055	↓	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT CART	2-10		↓	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-7	0102058	↓	1902204-011	8102112	1900067-021
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	↓	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS

DRAWN F P Jones 10-28-65
CHECKED
APPROVED
APPROVED E A Cl 11-3-65
APPROVED MIT W. Kupfer 3 Nov 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 1 OF 2

1021201 S

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102136	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
TBA	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
		OIA		0102073		2900023-011	8102162	2900023-021
		GDB		0102071		2900024-011	8102171	2900024-021
		G & N COOLANT & PWR CON.		0102083		1902134-021	8102183	1902134-031
		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
		CABLE SET, (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED C A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Mar 65
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 | SIZE D | DRAWING NO 1021201
SCALE | SHEET 2 OF 2

1021201 S

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REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
Ⓜ L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
Ⓜ M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	DKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A 32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II/LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102128	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olsen 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
A. L. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 2

T 1021201

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MEM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, 155/055		0102049		1901875-011	8102132	
9.10		ROTARY, TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
TBA	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
		OIA		0102073		2900023-011	8102162	2900023-021
		GDB		0102071		2900024-011	8102171	2900024-021
		G & N COOLANT & PWR CON.		0102083		1902134-021	8102183	1902134-031
		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
		CABLE SET, (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021

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DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F. P. Dunn 10-28-65
CHECKED E. Fute 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kyofer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 2 OF 2

1021201 T

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SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
Ⓜ L		REVISION STATUS CHANGED	JJ	CP	16 NOV 65	
Ⓜ M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ P		REVISION STATUS CHANGED	JM	PJ	21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
Ⓜ T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP	PJ	24 FEB 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	——	——	NECP A-15	——	1901893	——
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	——	——	NECP A-34	——	8102058	——
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	——	——	NECP A-32	——	8102003	——
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2	↓	REMOTE OPTICS CONTROLLER	6-8	0102010	↓	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	3-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	——	——	↓	——	8102018	——
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	1900004-021	8102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	——	——	NECP A-31	——	8102002	——
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	↓	1900866-011	8102098	1901876-011
8.3	↓	↓		↓	↓	1900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	1900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	1900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	1900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	1901308	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-3,5-14	0102015	↓	1900931-011	8102044	1901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-14	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	↓	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	——	——	——	↓	——	8102133	——
8.17.1	↓	G & N MOUNTING FIXTURE	2-9	0102058	↓	1902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER	1-9	0102051	↓	1902046-011	8102136	1902046-011
8.17.3	↓	OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057	↓	1902301-011	8102140	1902301-011
8.17.4.0	↓	OITS	3-17	——	↓	1902300-011	8102143	1902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER	3-17	——	↓	1901976-011	8102142	1901976-011
8.17.4.2	↓	INTERCONN. CABLE SET	3-17	——	↓	1902299	8102146	1902299
8.17.4.3	↓	GSE J-BOX OVERHEAD	3-17	0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER	2,3&5-17	0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II/LEM	SEE BELOW	——	——	NAS 9-497, SA42	——	8102100	——
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE		0102041	↓	1902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET, INTERCONNECT	1-7, 9-14	0102055	↓	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT. CART	2-10		↓	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	1900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-7	0102058	↓	1902204-011	8102112	1900067-021
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	↓	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

ND1000000	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN	F.P.	10-28-65
CHECKED		11-2-65
APPROVED		
APPROVED	E A Olsen	11-3-65
APPROVED MIT	W Kupfer A. C. METZGER	11/4/65
APPROVED MSC		DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201
SCALE ——		SHEET 1 OF 2

1021201 U

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
(M) L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
(M) M		REVISION STATUS CHANGED	RLP		3 DEC 65	
(M) N		REVISION STATUS CHANGED	JHP		15 DEC 65	
(M) P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
(M) T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P.		24 FEB 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, 155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, C&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
TBA	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
		OIA		0102073		2900023-011	8102162	2900023-021
		GDB		0102071		2900024-011	8102171	2900024-021
		G & N COOLANT & PWR CON.		0102083		1902134-021	8102183	1902134-031
		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
		CABLE SET, (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
TBA	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031

1021201 U

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

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CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-3-65
APPROVED MIT 3 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 2 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK I/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		,155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102116	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/O OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS 497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJJ	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25338	JN		21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MGM	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
Ⓜ U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

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CAPACITOR VALUES ARE IN μf
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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-3-65
APPROVED MIT W Kupfer 3 Nov 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 2 OF 2

1021201 V

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004	↓	1900004-011	1901894	1900004-021
1.2	↓	GSE/PSA J-BOX	3-12	0102003	↓	1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2	↓	REMOTE OPTICS CONTROLLER	6-8	0102010	↓	1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006	↓	1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—	↓	—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008	↓	1900004-021	8102017	1900004-021
6.4.2	↓	G & N COOLANT & POWER CONSOLE	10-14	0102013	↓	1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028	↓	900866-011	8102098	1901876-011
8.3	↓	↓		↓	↓	1900867-011	8102098	↓
8.4	↓	↓		↓	↓	1901663-011	8102098	↓
8.5	↓	↓		↓	↓	900866-021	8102099	1901875-011
8.6	↓	↓		↓	↓	900867-021	8102099	↓
8.7	↓	↓		↓	↓	1901663-021	8102099	↓
8.9	↓	PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10	↓	PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0	↓	OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1	↓	OPTICS INERTIAL ANALIZER	3-17	0102012	↓	1900004-021	8102020	1901976-011
8.11.2	↓	INTERCONN. CABLE SET	1-15	0102022	↓	901308	8102013	1902299
8.11.3	↓	↓	1-15	0102022	↓	1900740	8102013	1902299
8.11.4	↓	PSA TEST POINT ADAPTER	2-3, 5-14	0102015	↓	1900931-011	8102044	1901981-011
8.11.5	↓	G & N COOLANT & POWER CONSOLE	3-14	0102021	↓	1900145-011	8102040	1902134-011
8.11.6	↓	GSE J-BOX, OVERHEAD	3-17	0102014	↓	1900433-021	8102035	1901959-011
8.12	↓	SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13	↓	AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14	↓	INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	900342-011
8.15	↓	OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—	↓	—	8102133	—
8.17.1	↓	G & N MOUNTING FIXTURE	2-9	0102058	↓	1902204-011	8102135	1902204-011
8.17.2	↓	REMOTE OPTICS CONTROLLER	1-9	0102051	↓	1902046-011	8102136	1902046-011
8.17.3	↓	OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057	↓	902301-011	8102140	1902301-011
8.17.4.0	↓	OITS	3-17	—	↓	1902300-011	8102143	902300-011
8.17.4.1	↓	OPTICS INERTIAL ANALIZER	3-17	—	↓	1901976-011	8102142	1901976-011
8.17.4.2	↓	INTERCONN. CABLE SET	3-17	—	↓	1902299	8102146	1902299
8.17.4.3	↓	GSE J-BOX OVERHEAD	3-17	0102061	↓	1901959-011	8102149	1901959-011
8.17.4.4	↓	PSA TEST POINT ADAPTER	2,3 & 5-17	0102062	↓	1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II, LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II, LEM CAPABILITY	OITS	3-9, 11-16	0102045	↓	1902300-011	8102101	2900022-011
9.1.1	↓	OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043	↓	1901976-011	8102102	2900023-011
9.1.2	↓	G & N COOLANT & POWER CONSOLE		0102041	↓	1902134-011	8102108	1902134-021
9.1.3	↓	CABLE SET INTERCONNECT	1-7, 9-14	0102055	↓	1902299-011	8102114	2900025-011
9.2	↓	G & N TRANSPORT. CART	2-10		↓	1900009-021	8102110	1900009-031
9.3	↓	DEGAUSSER	1-6	0102031	↓	1900299-011	8102111	1900299-021
9.4	↓	G & N MOUNTING FIXTURE	2-7	0102058	↓	1902204-011	8102112	1900067-021
9.5	↓	IMU SHIPPING CONTAINER	1-14	0102047	↓	1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

REVISIONS

	SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-8-65	
M	L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M	M		REVISED PER TDRR 24431	RLP		3 DEC 65	
M	N		REVISED PER TDRR 24566	JHP		15 DEC 65	
M	P		REVISION STATUS CHANGED	JM		21-JAN 66	
	R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
	S		REVISION STATUS CHANGED	OKD		17 FEB 66	
M	T		REVISION STATUS CHANGED	RLP		18 FEB 66	
M	U		REVISION STATUS CHANGED	JHP		24 FEB 66	
M	V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
	W		REVISION STATUS CHANGED	P.W.T		13 MAY 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Dreyer 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED E A Olson 11-5-65
APPROVED MIT W Kupfer
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APPOLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE ——
SHEET 1 OF 2

1021201 W

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		155/055		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021 6	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W1C9)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G&N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	–	–	MARRIAGE KIT-2-CHG.		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-18	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	JJ	CP	11-3-65	
L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
M		REVISION STATUS CHANGED	RLP		3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338	JN		21-JAN-66	
R		REVISED PER TDRR 25895	RLP		15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111	RLP		18 FEB 66	
U		REVISED PER TDRR 26371	JHP		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6 APR 66	
W		REVISED PER TDRR 28594			13 MAY 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED
APPROVED MIT
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE —
SHEET 2 OF 2

1021201 W

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REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE ~~PER~~ TDRR 23726	JJ	CP	11-3-65	
Ⓜ L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
Ⓜ M		REVISED PER TDRR 24431	RLP		3 DEC 65	
Ⓜ N		REVISED PER TDRR 24566	JHP		15 DEC 65	
Ⓜ P		REVISION STATUS CHANGED	JM	PZ	21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
Ⓜ T		REVISION STATUS CHANGED	RLP		18 FEB 66	
Ⓜ U		REVISION STATUS CHANGED	JHP	PZ	24 FEB 66	
Ⓜ V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
Ⓜ W		REVISION STATUS CHANGED	R.W.T		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901308-011	8102012	1901308-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I/0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3, 5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES	—	—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3 & 5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

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NEXT ASSY	USED ON
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APPLICATION

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DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN		10-28-65
CHECKED		11-2-65
APPROVED		
APPROVED	C A Olson	11-3-65
APPROVED MIT	W Kupfer	3Nov65
APPROVED MSC	A. C. METZGER	
		DATE

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974 SIZE D DRAWING NO. 1021201

SCALE —— SHEET 1 OF 2

1021201 Y

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ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.7	BLOCK II/LEM CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.8		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.9		, ISS/OSS		0102049		1901875-011	8102132	
9.10		ROTARY TABLE ASSY	1-11	0102030		1900926-011	81021[illegible]	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE, G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G&N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726	J	CP	11-3-65	
Ⓜ L		REVISED PER TDRR 23723	JJ	CP	10 NOV 65	
Ⓜ M		REVISION STATUS CHANGED	RLP		3 DEC 65	
Ⓜ N		REVISION STATUS CHANGED	JHP		15 DEC 65	
Ⓜ P		REVISED PER TDRR 25338	JN	PJ	21-JAN 66	
R		REVISED PER TDRR 25895	RLP	MCN	15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
Ⓜ T		REVISED PER TDRR 26111	RLP	WD	18 FEB 66	
Ⓜ U		REVISED PER TDRR 26371	J.H.P	PJ	24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
Ⓜ W		REVISED PER TDRR 28594	PYT		13 MAY 66	
Y		REVISED PER TDRR 29000	RLP		24 MAY 66	

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. [illegible] 10-28-65
CHECKED [illegible] 11-2-65
APPROVED
APPROVED E.A. Olson [illegible]-65
APPROVED MIT W Kupfer [illegible]
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N GSE
(AC ELECTRONICS)

CODE IDENT NO	SIZE	DRAWING NO.
99974	D	1021201

SCALE — — SHEET 2 OF 2

1021201 Y

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE PER TDRR 23726	JJ	CP	11-8-65	
L		REVISION STATUS CHANGED	JJ	CP	10 NOV 65	
M		REVISED PER TDRR 24431	RLP		3 DEC 65	
N		REVISED PER TDRR 24566	JHP		15 DEC 65	
P		REVISION STATUS CHANGED	JM		21-JAN 66	
R		REVISION STATUS CHANGED	RLP	MEM	15 FEB 66	
S		REVISION STATUS CHANGED	OKD		17 FEB 66	
T		REVISION STATUS CHANGED	RLP		18 FEB 66	
U		REVISION STATUS CHANGED	JHP		24 FEB 66	
V		REVISION STATUS CHANGED	B.	CP	6-APR-66	
W		REVISION STATUS CHANGED	RWT		13 MAY 66	
Y		REVISION STATUS CHANGED	RLP		24 MAY 66	
Z		REVISION STATUS CHANGED	JIM		7 JUN 66	

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF.)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
1.0	RETROFIT KIT LIST FOR NECP A-15	SEE BELOW	—	—	NECP A-15	—	1901893	—
1.1	GYRO CAGING	OPTICS INERTIAL ANALIZER	3-14	0102004		1900004-011	1901894	1900004-021
1.2		GSE/PSA J-BOX	3-12	0102003		1900268-011	1901895	1900268-021
1.3	↓	GSE J-BOX, OVERHEAD	3-14	0102002	↓	1900433-011	1901896	1900433-021
2.0	PHASE SENSITIVE DEMODULATOR	OSCILLOGRAPH CONSOLE	3-14	1021263	NECP A-8	1900000-011	1021243	1900000-011
3.0	↓	↓	3-14	1021263	↓	1900000-011	1021244	1900000-011
4.0	RETROFIT KIT LIST FOR NECP A-34	SEE BELOW	—	—	NECP A-34	—	8102058	—
4.1		GSE/PSA J-BOX	1 & 2	0102007	NECP A-34	1900268-021	8102059	1901933-011
5.0	ADDITIONAL MTG CAPABILITY	G & N TRANSPORT CART	2-10	0102018	ECP-12	1900009-011	8102072	1900009-021
6.0	RETROFIT KIT LIST FOR NECP A-32	SEE BELOW	—	—	NECP A-32	—	8102003	—
6.1	MARRIAGE CHANGES	G & N MOUNTING FIXTURE	7-9	0102011	NECP A-32	1900014-011	8102015	1900014-011
6.2		REMOTE OPTICS CONTROLLER	6-8	0102010		1900491-011	8102005	1900491-011
6.3	↓	GSE/PSA J-BOX	9-10	0102006		1900268-021	8102014	1900268-021
6.4.0	RETROFIT KIT LIST FOR OITS, PART OF NECP A-32	SEE BELOW	—	—		—	8102018	—
6.4.1	MARRIAGE CHANGES	OPTICS INERTIAL ANALIZER	10-14	0102008		1900004-021	8102017	1900004-021
6.4.2		G & N COOLANT & POWER CONSOLE	10-14	0102013		1900145-011	8102053	1900145-011
6.4.3	↓	INTERCONN. CABLE SET	8-12	0102009	↓	1901309-011	8102012	1901309-011
7.0	BLK I/100 CAPABILITY	G & N MOUNTING FIXTURE	2-9	0102025	ECP-18	1900014-011	8102001	1902204-011
8.0	RETROFIT KIT LIST FOR NECP A-31	SEE BELOW	—	—	NECP A-31	—	8102002	—
8.1	BLK I, 0 & I/100 CAPABILITY	GSE/PSA J-BOX	3-10	0102026	NECP A-31	1900268-021	8102096	1900268-031
8.2	BLK I/100 CAPABILITY	HOSE ASSY		0102028		1900866-011	8102098	1901876-011
8.3						1900867-011	8102098	
8.4						1901663-011	8102098	↓
8.5						1900866-021	8102099	1901875-011
8.6						1900867-021	8102099	
8.7		↓		↓		1901663-021	8102099	↓
8.9		PURGE & FILL FIXTURE	1-5	0102024	↓	1900803-011	8102034	1902371-011
8.10		PSA MOUNTING FIXTURE	3-14	0102020	ECP-61	1900606-011	8102036	1900606-021
8.11.0		OITS	3-17	0102023	NECP A-31	1900005-021	8102019	1902300-011
8.11.1		OPTICS INERTIAL ANALIZER	3-17	0102012		1900004-021	8102020	1901976-011
8.11.2		INTERCONN. CABLE SET	1-15	0102022		1901308	8102013	1902299
8.11.3		↓	1-15	0102022		1900740	8102013	1902299
8.11.4		PSA TEST POINT ADAPTER	2-3,5-14	0102015		1900931-011	8102044	1901981-011
8.11.5		G & N COOLANT & POWER CONSOLE	3-14	0102021		1900145-011	8102040	1902134-011
8.11.6		GSE J-BOX, OVERHEAD	3-17	0102014		1900433-021	8102035	1901959-011
8.12		SIMULATOR SET, LOAD & SIGNAL		0102017	↓	1900797-011	8102057	1900797-021
8.13		AUXILIARY BATTERY PACK	1-2	0102019	ECP-60	1901492-011	8102063	1901492-021
8.14		INERTIAL COMP. TEMP. CONTROL		0102016	ECP-59	1900342-011	8102062	1900342-011
8.15		OPTICS NAV. BASE MTG FIXT.	2-9	0102029	ECP-62	1900013-011	8102073	1902301-011
8.16	↓	G & N HARNESS HANDL. & INST. FIXT.	1-6	0102027	NECP A-31	1901846-011	8102090	1901846-021
8.17.0	BLK I/100 MARRIAGE CHANGES		—	—		—	8102133	—
8.17.1		G & N MOUNTING FIXTURE	2-9	0102058		1902204-011	8102135	1902204-011
8.17.2		REMOTE OPTICS CONTROLLER	1-9	0102051		1902046-011	8102136	1902046-011
8.17.3		OPTICS/NAV. BASE MTG. FIXTURE	2-9	0102057		1902301-011	8102140	1902301-011
8.17.4.0		OITS	3-17	—		1902300-011	8102143	1902300-011
8.17.4.1		OPTICS INERTIAL ANALIZER	3-17	—		1901976-011	8102142	1901976-011
8.17.4.2		INTERCONN. CABLE SET	3-17	—		1902299	8102146	1902299
8.17.4.3		GSE J-BOX OVERHEAD	3-17	0102061		1901959-011	8102149	1901959-011
8.17.4.4		PSA TEST POINT ADAPTER	2,3&5-17	0102062		1901981-011	8102150	1901981-011
8.17.5	↓	GSE PSA J-BOX	1-14	0102064	↓	1902195-011	8102152	1902195-011
9.0	MASTER RETROFIT KIT LIST FOR GSE BLK II LEM	SEE BELOW	—	—	NAS 9-497, SA42	—	8102100	—
9.1.0	BLOCK II LEM CAPABILITY	OITS	3-9, 11-16	0102045		1902300-011	8102101	2900022-011
9.1.1		OPTICS INERTIAL ANALIZER	3-9, 11-16	0102043		1901976-011	8102102	2900023-011
9.1.2		G & N COOLANT & POWER CONSOLE		0102041		1902134-011	8102108	1902134-021
9.1.3		CABLE SET INTERCONNECT	1-7, 9-14	0102055		1902299-011	8102114	2900025-011
9.2		G & N TRANSPORT. CART	2-10			1900009-021	8102110	1900009-031
9.3		DEGAUSSER	1-6	0102031		1900299-011	8102111	1900299-021
9.4		G & N MOUNTING FIXTURE	2-7	0102058		1902204-011	8102112	1900067-021
9.5		IMU SHIPPING CONTAINER	1-14	0102047		1900010-011	8102113	1900010-021
9.6	↓	REMOTE OPTICS CONTROLLER	1-9	0102046	↓	1902046-011	8102123	1902046-021

NOTES:

1. ITEM NUMBERS HAVING ANY OTHER NUMERAL THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS				

NEXT ASSY	USED ON
ND1000000	
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. Young 10-28-65
CHECKED
APPROVED
APPROVED
APPROVED MIT
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 1 OF 2

N 1021201

ITEM NO	DESCRIPTION	END ITEM	S/N	R.I.B. NO. (REF)	AUTHORIZATION	P/N TO BE MODIFIED (REFERENCE)	RFK NO.	NEW P/N (REFERENCE)
9.[illegible]	[illegible] CAPABILITY	OPTICS/NAV BASE MTG FIXTURE	2-8	0102048	NAS 9-497, SA42	1902301-011	8102131	2900072-011
9.[illegible]		HOSE SET, INTERCONN, G&N		0102049		1901876-011	8102130	
9.[illegible]		,155/055		0102049		1901875-011	8102132	
9.[illegible]		ROTARY TABLE ASSY	1-11	0102030		1900926-011	8102[illegible]	1900926-021
10.0	BLOCK I/50 GSE MOD FOR USE WITH I/100 OR I/0 OF I/50 A/B SYS	I/50 GSE RETROFIT			ECP-0099	1901930-011	8102139	1901930-021
10.1		GSE/PSA J-BOX	1 & 2	0102052		1901933-011	8102137	1901933-021
10.2		I/50 CABLE (W109)	1 & 2	0102053		1902173	8102138	1902522
11.0	ADDITION OF STOCK RECORDERS	FIXTURE G&N HARNESS HANDLING & INSTALLATION	1-14	0102066	ECP-75	1901846-021	8102145	1901846-031
12.0	REMOTE ALARM CAPABILITY	ICTC	1-14	0102065	ECP-0213	1900342-011	8102155	1900342-021
12.1	REMOTE ALARM CAPABILITY	BATTERY PWR. PACK	1-14	0102065	ECP-0213	1900011-021	8102153	1900011-031
13.0	GSE LORS MARRIAGE CHANGES	SEE BELOW	—	—	NAS-497 CCA0072	—	8102159	—
13.1		OITS	3-5, 7-9, 11-16, 18-24	0102072		2900022-011	8102160	2900022-021
13.1.1		OIA		0102073		2900023-011	8102162	2900023-021
13.1.2		GDB		0102071		2900024-011	8102171	2900024-021
13.1.3		G & N COOLANT & PWR CONSOLE		0102083		1902134-021	8102183	1902134-031
13.1.4		CABLE SET, INTERCONNECT		0102077		2900025-011	8102170	2900025-021
13.2		CABLE ASSY, 1-13 (SPEC. LEM)	1-13	0102082		6900043-011	8102179	6900043-021
13.3		CABLE ASSY (SPEC. BLK II)	1-12	0102081		2900712-011	8102178	2900712-021
13.4		SUBSYS. MTG. FIXTURE	1-18	0102079		2900070-011	8102184	2900070-021
13.5		COMP. MTG. PLATE	1-13	0102080		6900007-011	8102185	2900007-021
13.6		PSA/TPA	1-19	0102069		2900037-011	8102161	2900037-021
13.7		CABLE SET, INTERCONN.	3-5, 7-9, 11-16	0102078		2900713-011	8102168	2900713-021
14.0	INTERROGATOR MODIFICATION	INTERROGATOR ELECTRONIC COMP. ASSEMBLY	1-7, 10-12, 16, 17	0102068	BLOCK II MARRIAGE CHANGE	2900076-011	8102174	2900076-021
15.0	RETROFIT KIT FOR PSA ADAPTER MODULE	PSA ADAPTER MODULE	1-2	0102084	ECP 84R	1902431-011	8102175	1902431-031
16.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	G & N HARNESS HANDLING AND INSTALLATION FIXTURE	1-14	0102085	ECP 270	1901846-031	8102187	1901846-041
17.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 100)	1-10, 13 & 14	0102108	ECP 269	1902195-011	8102234	1902195-021
17.1	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	GSE/PSA JUNCTION BOX (BLOCK I SERIES 50)	11 & 12	0102099	ECP 269	1901933-021	8102240	1901933-031
18.0	GSE MARRIAGE KIT-2-CHANGES	SEE BELOW	—	—	MARRIAGE KIT-2-CHG		8102157	
18.1		OITS	3-5, 7-9, 11-16, 18-24	0102107		2900022-021	8102196	2900022-031
18.2		OIA		0102106		2900023-021	8102198	2900023-031
18.3		GDB		0102103		2900024-021	8102197	2900024-031
18.4		INTERCONNECT CABLE ASSY		0102100		2900025-021	8102193	2900025-031
18.5		1-13 (SPEC. LEM) CABLE SET	1-13	0102091		6900043-021	8102189	6900043-031
18.6		(SPEC. BLK II)	1-12	0102101		2900712-021	8102192	2900712-031
18.7		CABLE SET, INTERCONNECT	3-5, 7-9, 11-16	0102102		2900713-021	8102218	2900713-031
18.8		PTA/PEA MOUNTING FIXTURE	1-18	0102086		2900066-011	8102194	2900066-021
19.0	COMPATIBILITY WITH A/B CHANGES DUE TO ENVIRONMENTAL TESTS	TRANSPORTATION CART, G&N	1 THRU 12	0102088	ECP 267 & 169	1900009-031	8102195	1900009-041

REVISIONS

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
K		REPLACES REV J WITH CHANGE TDRR 23726		CP	11-3-65	
L		REVISED PER TDRR 23723		CP	10 NOV 65	
M		REVISION STATUS CHANGED			3 DEC 65	
N		REVISION STATUS CHANGED	JHP		15 DEC 65	
P		REVISED PER TDRR 25338			21 JAN 66	
R		REVISED PER TDRR 25895			15 FEB 66	
S		REVISED PER TDRR 26069	DKD		17 FEB 66	
T		REVISED PER TDRR 26111			18 FEB 66	
U		REVISED PER TDRR 26371	J.H.P		24 FEB 66	
V		REVISED PER TDRR 27658	B.	CP	6-APR-66	
W		REVISED PER TDRR 28594			13 MAY 66	
Y		REVISED PER TDRR 29000			24 MAY 66	
Z		REVISED PER TDRR 29232	JIMP		7 JUN 66	

QTY REQD	PART OR IDENTIFYING NO	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
ND1000000	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS

DRAWN F.P. 10-28-65
CHECKED 11-2-65
APPROVED
APPROVED 11-2-65
APPROVED MIT W. 3 Mar 65
APPROVED MSC A. C. METZGER
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G & N GSE
(AC ELECTRONICS)

CODE IDENT NO 99974
SIZE D
DRAWING NO. 1021201
SCALE
SHEET 2 OF 2

1021201 Z

1021201

PART NUMBER	PART NAME

REVISIONS TDRR 08232 MAY 12 64

SYM	DESCRIPTION	CHG NO.	DATE	APPD.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08232 **DATE** 5/12/64

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J. Parks DATE 16 APR 64
CHECKED 16 APR 64
APPROVAL EC Ballard 16 APR 64
APPROVAL
NASA APPROVAL 5/12/64
MIT APPROVAL 12 May 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

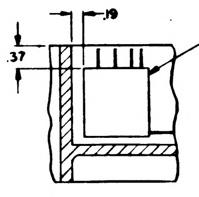
MASTER RETROFIT KIT LIST - GSE

CODE IDENT NO.
SIZE B
1021201
SCALE
SHEET

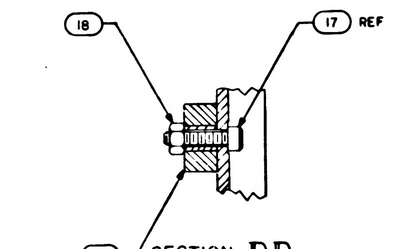
MIL 1077B—P

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS T.C.R.R.			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TCRR 14321	20 AUG 64	

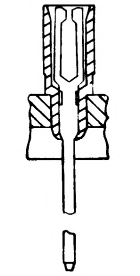


PARTIAL SECTION E-E



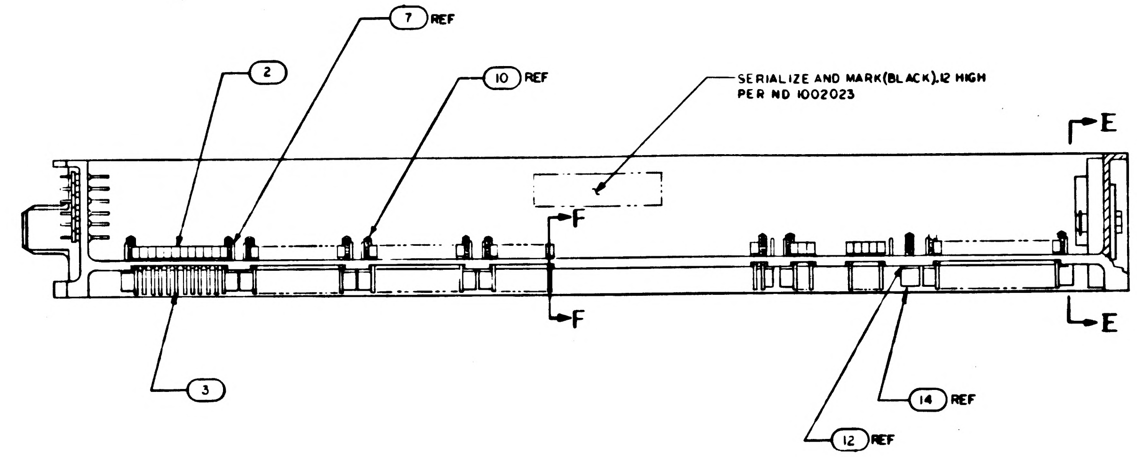
SECTION D-D

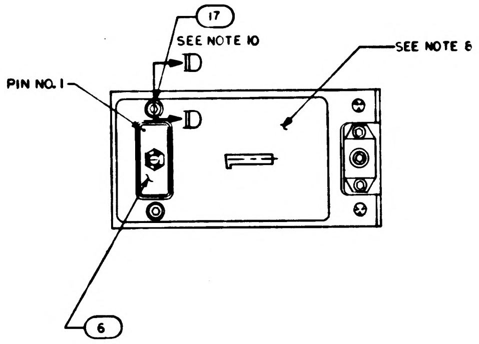
SCALE 2/1

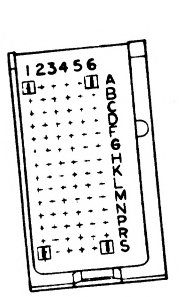


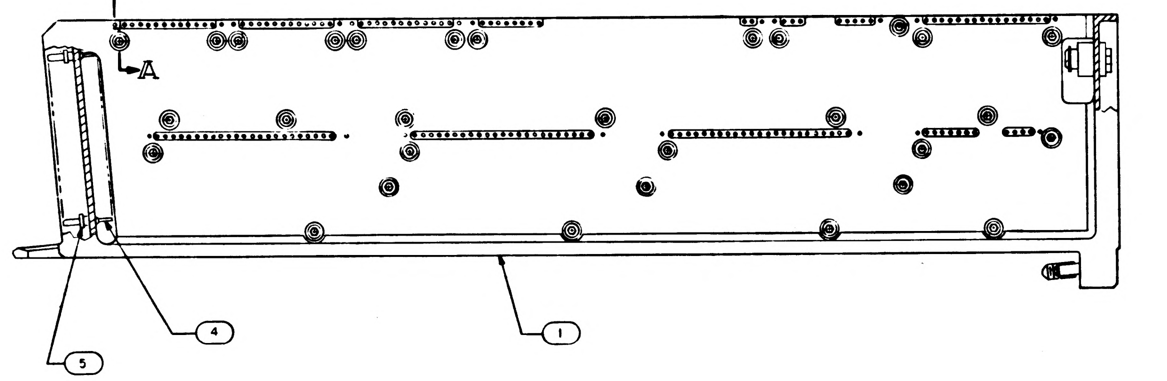
PARTIAL SECTION F-F

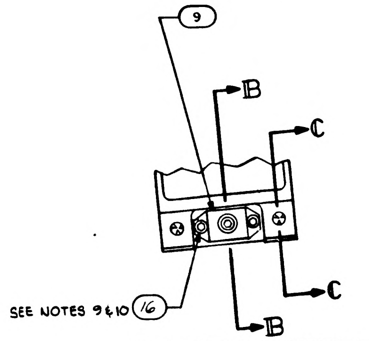
149 PLACES

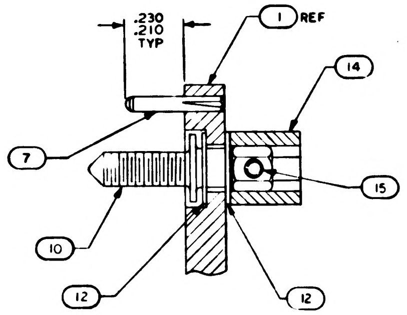






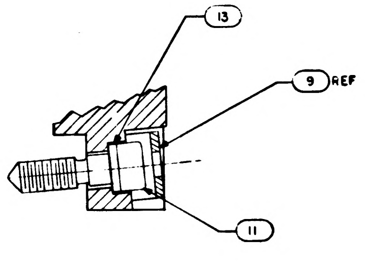






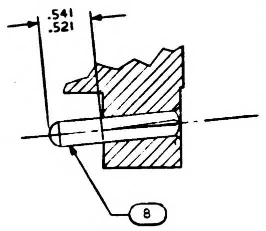
SECTION A-A

SCALE 4/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

TERMINATION CHART	
FROM	TO
45A1E7	45A1J1- 12
E8	- 3
E9	- 33
E10	- 17
45A1E11	45A1J1- 18
E1B	45A1J12- 2
E E	45A1J12- 3
E1F	45A1J12- 4
E2B	45A1J12- 5
E2E	45A1J12- 6
E2F	45A1J12- 7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019 WHITE.
3. BOND ITEM NO 19 TO ITEM NO.1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136
5. BOND ITEM NO'S 20,21,22,23,26 & 24 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NO.S 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 LB
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
12. ~~PROCURE~~ PER PS 1007141.
13. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 27 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.

QUANTITY REQUIRED							
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		29	1021204-007	CONTACT
			1		28	1021205-001	RECEPTACLE, DS TYPE
			AR		27	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		26	1021231	WIRING HARNESS E
			X		25	1008450	WIRING DIAGRAM
			1		24	1015741	WIRE LIST A-A
			1		23	1015740	WIRING HARNESS D
			1		22	1015739	WIRING HARNESS C
			1		21	1015738	WIRING HARNESS B
			1		20	1015737	WIRING HARNESS A
			1		19	1007088	BUFFER RESISTOR ASSY
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			30		15	MS171433	PIN, SPRING
			30		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			60		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			30		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			20		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			149		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			149		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008101	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021221-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+ 1°
- —	-.02	- 1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

DRAWN R. Tamoni DATE 28 MAY 64
CHECKED 9 Jul 64
APPROVAL 6/8/64
APPROVAL 30 Jun 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 1

CODE IDENT NO
SIZE E
1021211
SCALE 1:1
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
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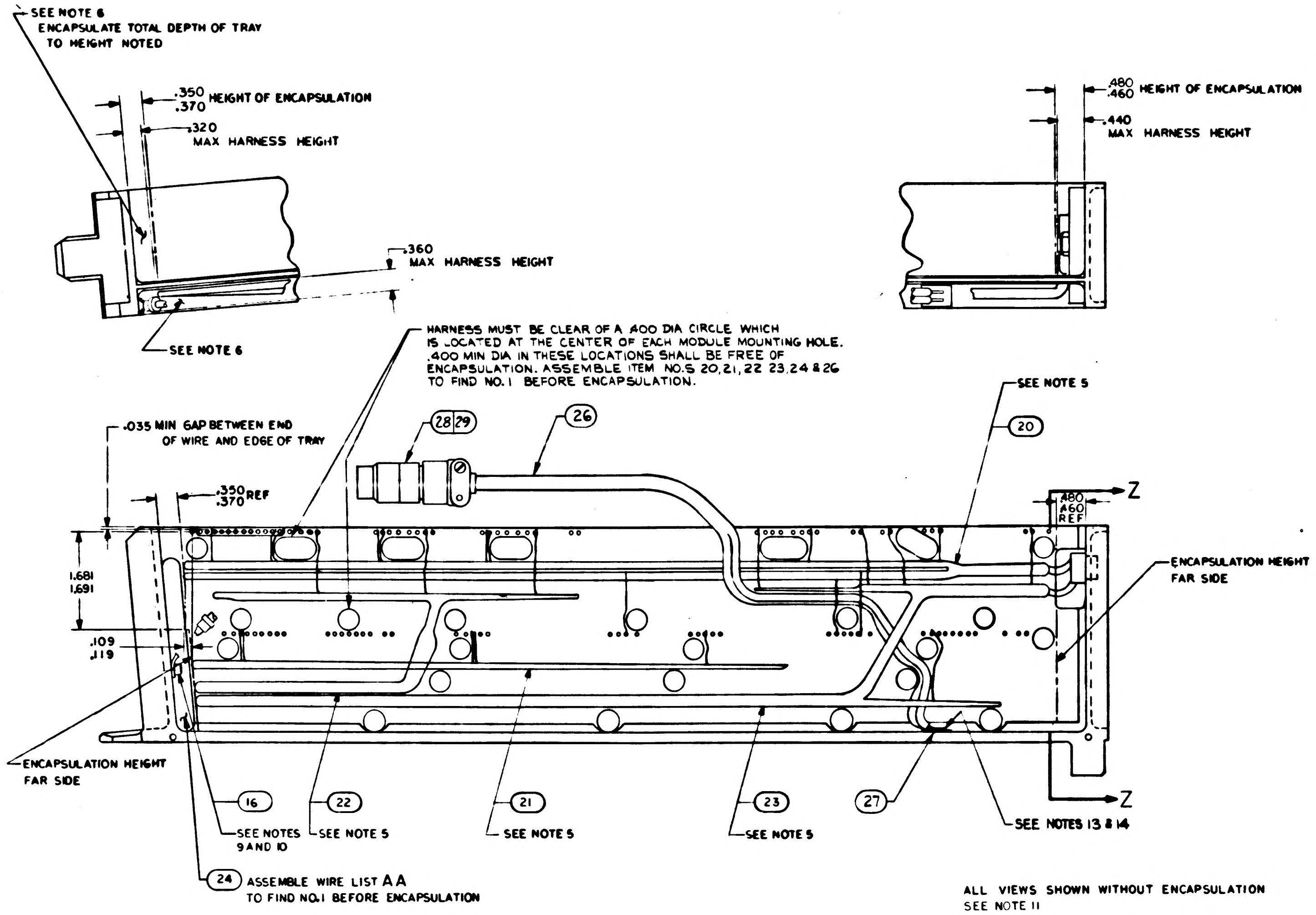
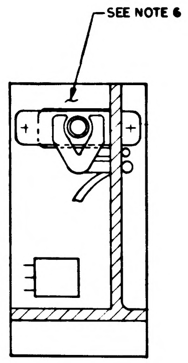
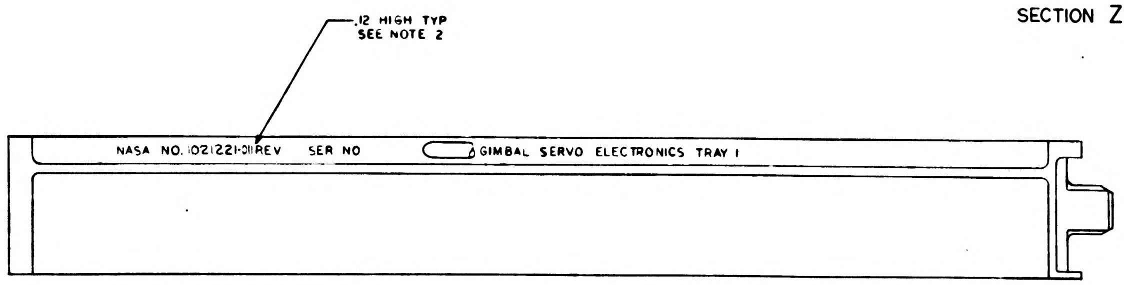

SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.350
.370 HEIGHT OF ENCAPSULATION
.320 MAX HARNESS HEIGHT
.360 MAX HARNESS HEIGHT
SEE NOTE 6
.480
.460 HEIGHT OF ENCAPSULATION
.440 MAX HARNESS HEIGHT
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO.S 20, 21, 22 23, 24 & 26 TO FIND NO. 1 BEFORE ENCAPSULATION.
SEE NOTE 5
20
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
28
29
26
.350
.370 REF
Z
.480
.460
REF
ENCAPSULATION HEIGHT FAR SIDE
1.681
1.691
.109
.119
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 9 AND 10
22
SEE NOTE 5
21
SEE NOTE 5
23
SEE NOTE 5
27
SEE NOTES 13 & 14
Z
24
ASSEMBLE WIRE LIST AA TO FIND NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021221-011 REV SER NO
GIMBAL SERVO ELECTRONICS TRAY 1

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

1021221-011	1021207-011	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ANGLES ± DO NOT SCALE THIS DRAWING MATERIAL — HEAT TREATMENT — FINAL FINISH —	MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-497 DRAWN R. Tomasso DATE 28 MAY 64 CHECKED 9 Jun 64 APPROVAL 6/8/64 APPROVAL 8 Jun 64 9 May 64 NASA APPROVAL 7/14/64 MIT APPROVAL
NEXT ASSY	USED ON		
APPLICATION			

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY I

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1021211
SCALE 1/1
WT
SHEET 2 OF 2

1021211

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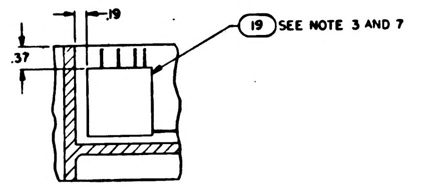
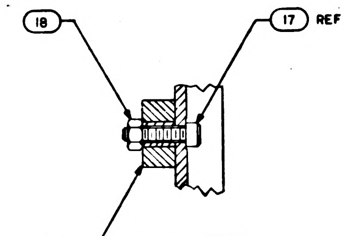
REVISIONS TDRR			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321		
B	REVISED PER TDRR 16980	MAR 65	

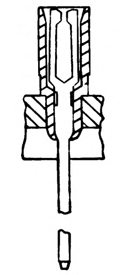


PARTIAL SECTION E-E

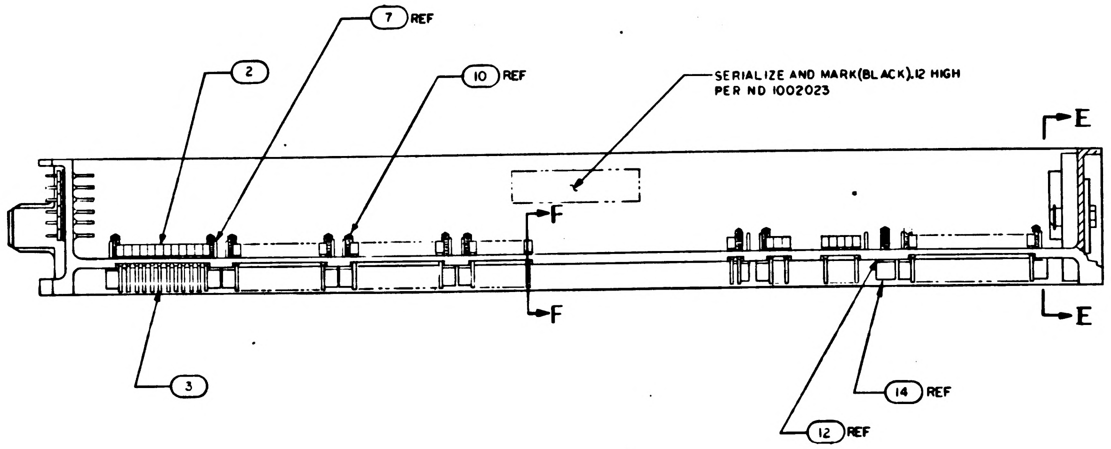


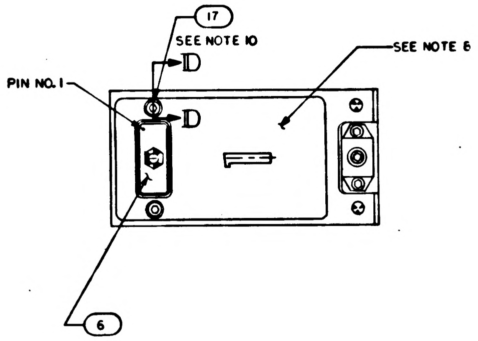
SECTION D-D

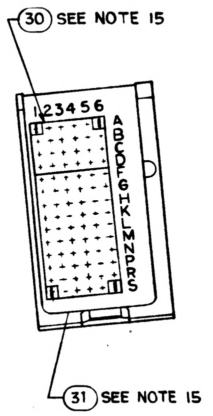
SCALE 2/1

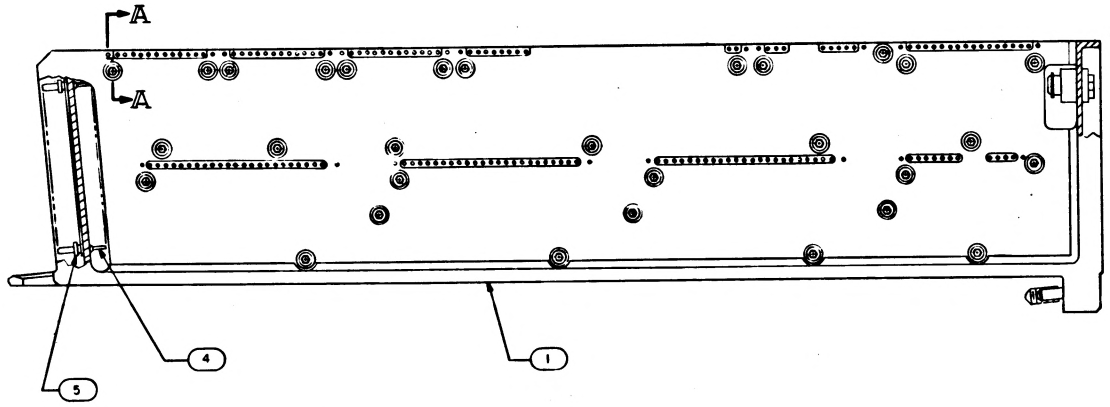


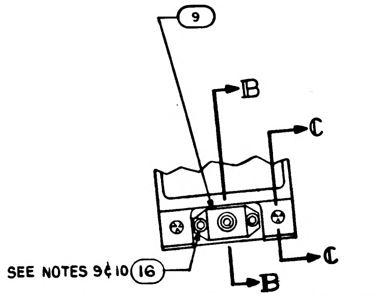
PARTIAL SECTION F-F
149 PLACES

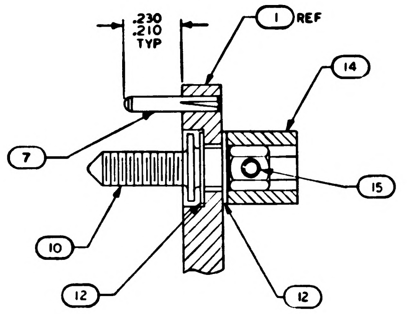






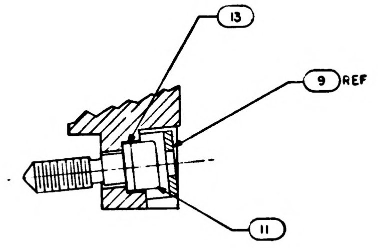






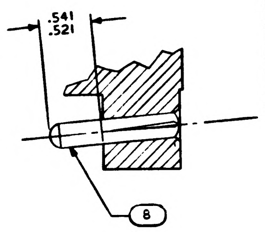
SECTION A-A

SCALE 4/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

TERMINATION CHART	
FROM	TO
45A1E7	45A1J1 - 12
E8	- 3
E9	- 33
E10	- 17
45A1E11	45A1J1 - 18
E1B	45A1J12 - 2
E1E	45A1J12 - 3
E1F	45A1J12 - 4
E2B	45A1J12 - 5
E2E	45A1J12 - 6
E2F	45A1J12 - 7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019 WHITE.
3. BOND ITEM NO 19 TO ITEM NO.1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136
5. BOND ITEM NO'S 20,21,22,23,26 & 24 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NO.S 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 LB
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
12. PROCURE PER PS 1007141.
13. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 27 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
15. BOND ITEM NUMBERS 30 AND 31 TO ITEM NUMBER 5 PER ND 1002237.

QUANTITY REQUIRED								
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		31	1008552	GASKET
			1		30	1008551	GASKET
			1		29	1021204-007	CONTACT
			1		28	1021205-001	RECEPTACLE, DS TYPE
			AR		27	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		26	1021231	WIRING HARNESS E
			X		25	1008450	WIRING DIAGRAM
			1		24	1015741	WIRE LIST A-A
			1		23	1015740	WIRING HARNESS D
			1		22	1015739	WIRING HARNESS C
			1		21	1015738	WIRING HARNESS B
			1		20	1015737	WIRING HARNESS A
			1		19	1007088	BUFFER RESISTOR ASSY
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			30		15	MS171433	PIN, SPRING
			30		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			60		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			30		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			20		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			149		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			149		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008101	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021221-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+ 1°
- —	-.02	- 1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

DRAWN R. Tampons DATE 28 MAY 64
CHECKED 4 JUL 64
APPROVAL 6/8/64
APPROVAL 8/10/64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 1

CODE IDENT NO.
SIZE E
1021211

SCALE 1:1
SHEET 1 OF 2

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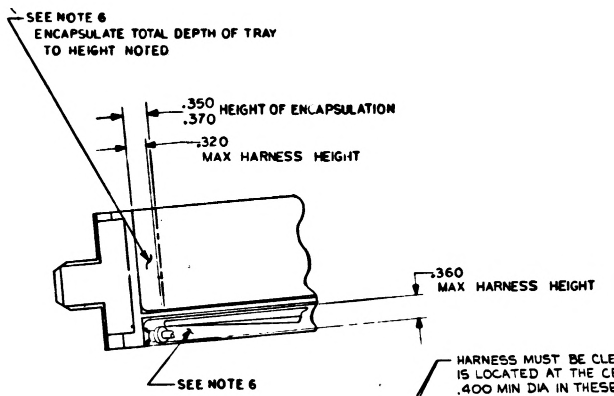
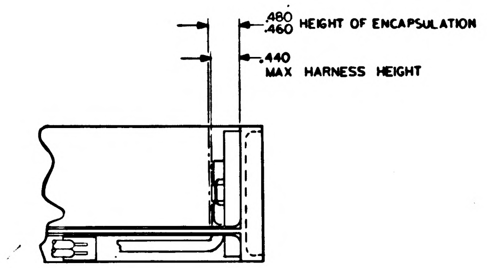
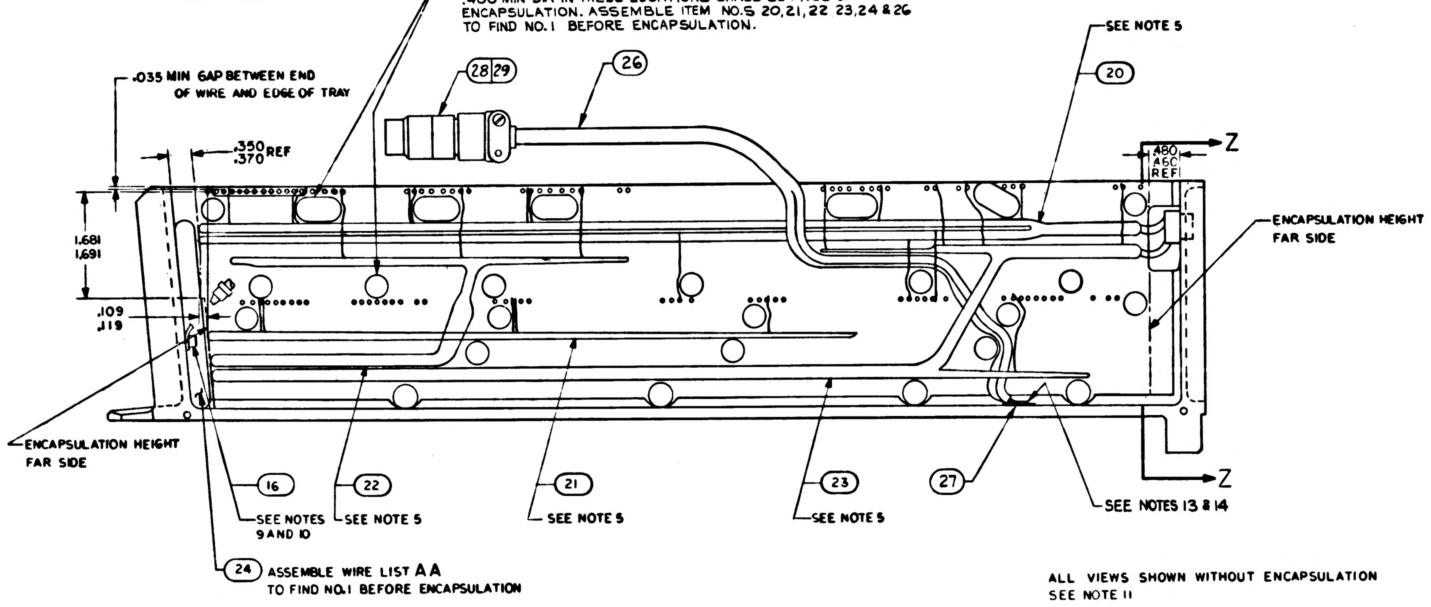
REVISIONS TDRR 109

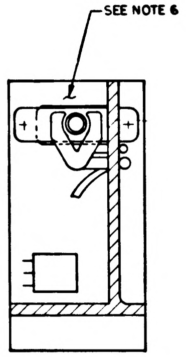
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	20 NOV 64	
B	REVISED PER TDRR 16980	8 MAR 65	


SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.350 .370 HEIGHT OF ENCAPSULATION
.320 MAX HARNESS HEIGHT
.360 MAX HARNESS HEIGHT
SEE NOTE 6

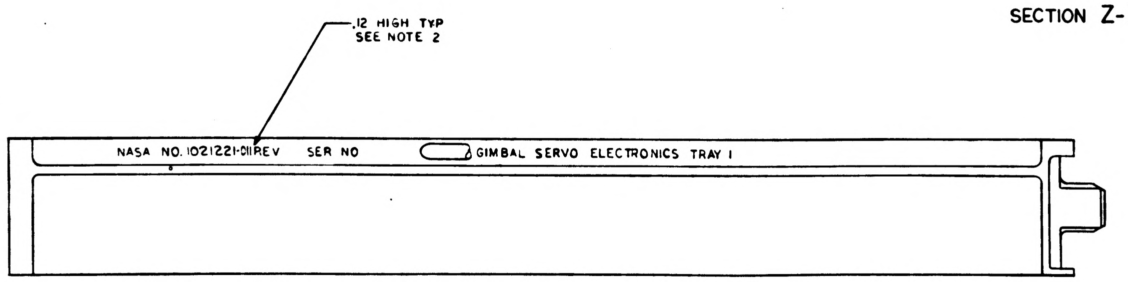

.480 .460 HEIGHT OF ENCAPSULATION
.440 MAX HARNESS HEIGHT


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO.S 20,21,22 23,24 & 26 TO FIND NO. 1 BEFORE ENCAPSULATION.
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350 .370 REF
28 29
26
SEE NOTE 5
20
.480 .460 REF
Z
1.681 1.691
.109 .119
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
22
21
23
27
Z
SEE NOTES 9 AND 10
SEE NOTE 5
SEE NOTE 5
SEE NOTE 5
SEE NOTES 13 & 14
24 ASSEMBLE WIRE LIST AA TO FIND NO.1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP SEE NOTE 2
NASA NO. 1021221-011REV SER NO
GIMBAL SERVO ELECTRONICS TRAY I

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021221-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497

DRAWN R. Tomason DATE 28 MAY 64
CHECKED 4 JUN 64
APPROVAL 6/8/64
APPROVAL 8 JUN 64
D. R. 6 MAY 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 Jul 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY I

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1021211
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

SYM	DESCRIPTION	DATE	APPROVAL
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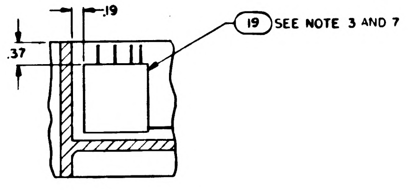
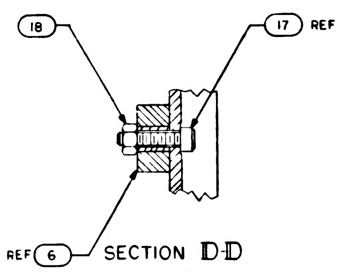
B	REVISED PER TDRR 6980	8 MAR 65	
C	REVISED PER TDRR 20118	JUN 65	

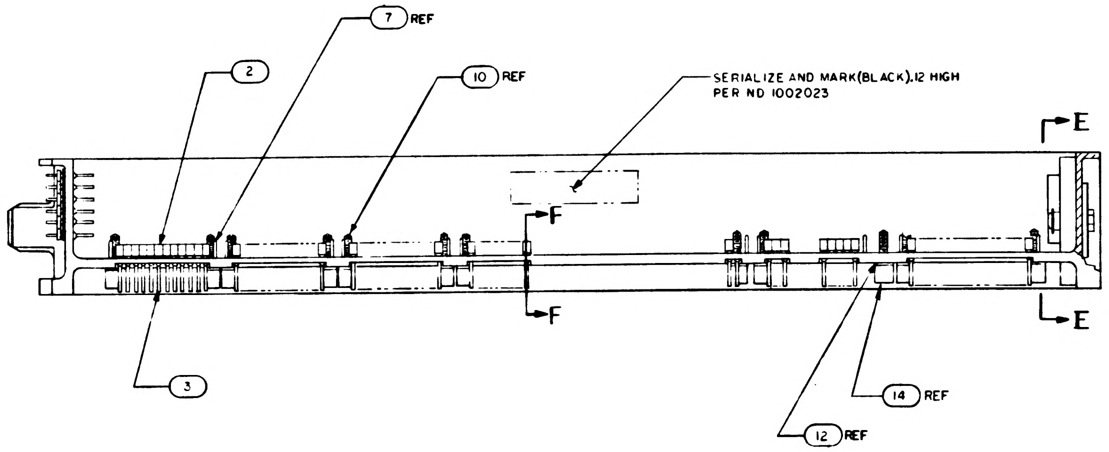


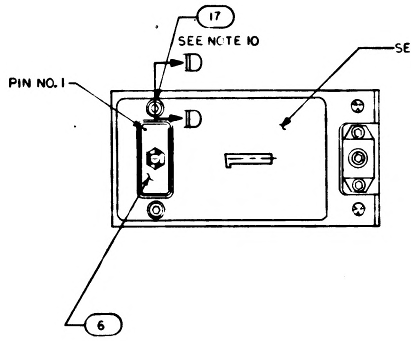
PARTIAL SECTION E-E

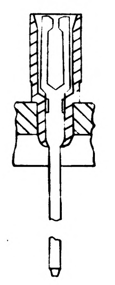


SECTION D-D

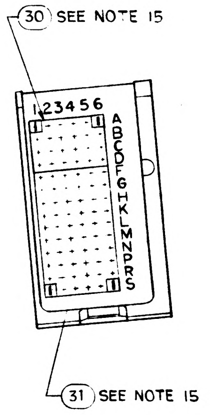
SCALE 2/1

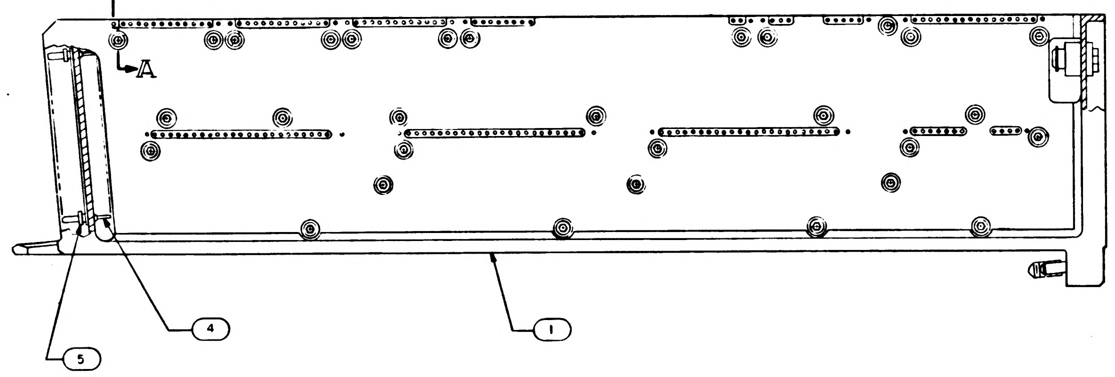


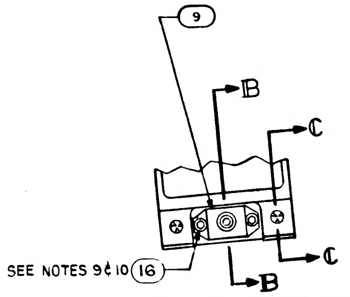


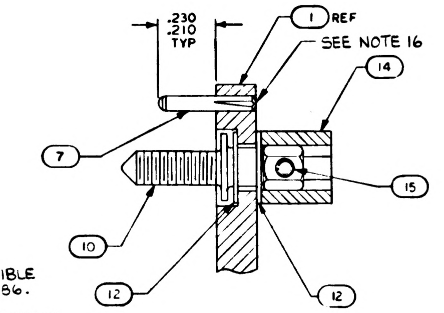


PARTIAL SECTION F-F
149 PLACES



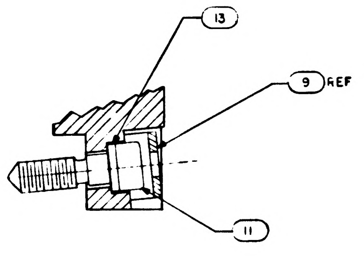






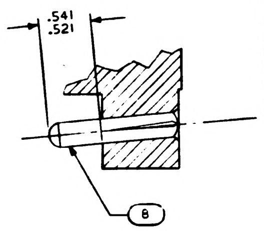
SECTION A-A

SCALE 4/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

TERMINATION CHART	
FROM	TO
45A1E7	45A1J1 - 12
E8	- 3
E9	- 33
E10	- 17
45A1E11	45A1J1 - 18
E1B	45A1J12 - 2
E1E	45A1J12 - 3
E1F	45A1J12 - 4
E2B	45A1J12 - 5
E2E	45A1J12 - 6
E2F	45A1J12 - 7

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND 1002019 WHITE.
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 & NASA DRAWING 1010686.
4. ASSEMBLE ITEM NOS 2, 3, 4 & 5 PER ND 1002136.
5. BOND ITEM NO'S 20, 21, 22, 23, 26 & 24 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY.
6. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NO.S 16 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 LB
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
12. PROCURE PER PS 1007141.
13. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 27 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
15. BOND ITEM NUMBERS 30 AND 31 TO ITEM NUMBER 5 PER ND 1002237
16. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
17. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

			1		31	1008552	GASKET
			1		30	1008551	GASKET
			1		29	1021204-007	CONTACT
			1		28	1021205-001	RECEPTACLE DS TYPE
			AR		27	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		26	1021231	WIRING HARNESS E
			X		25	1008450	WIRING DIAGRAM
			1		24	1015741	WIRE LIST A-A
			1		23	1015740	WIRING HARNESS D
			1		22	1015739	WIRING HARNESS C
			1		21	1015738	WIRING HARNESS B
			1		20	1015737	WIRING HARNESS A
			1		19	1007088	BUFFER RESISTOR ASSY
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			30		15	MS171433	PIN, SPRING
			30		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			60		12	1004206	WASHER THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			30		10	1008095	SCREW JACK
			1		9	1001317	RETAINER JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			20		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			149		3	1006781-2	CONTACT, WRAPOST, FEMALE [illegible]
			149		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008101	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021221-011	1021207-011	-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+ 1°
- —	-.02	- 1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DWG NO
CONTRACT
DRAWN R. Tinyami DATE 28 MAY 64
CHECKED 4 JUL 64
APPROVAL 6/8/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 1

CODE IDENT NO 80230
SIZE E
1021211
SCALE 1:1
SHEET OF 2

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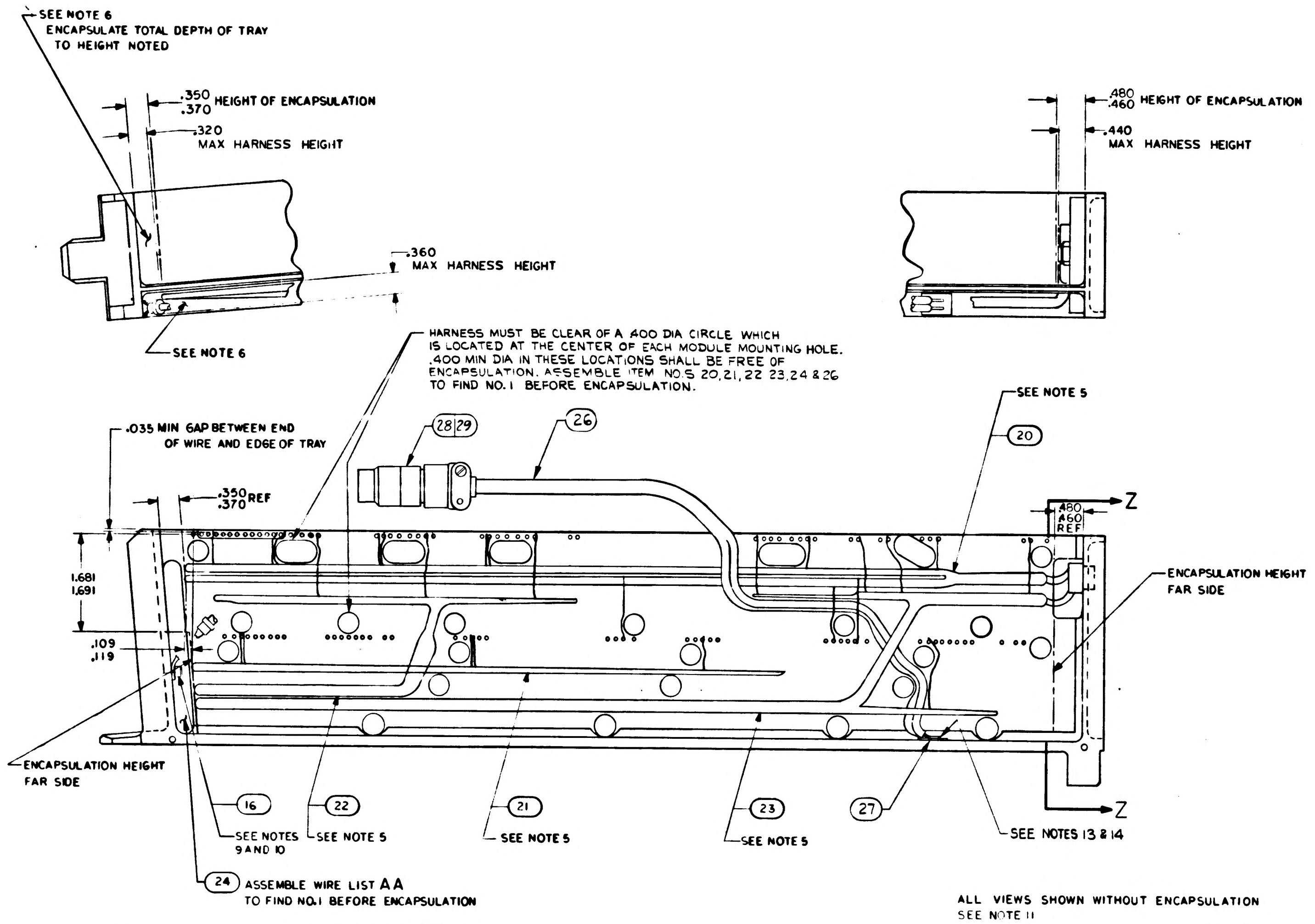
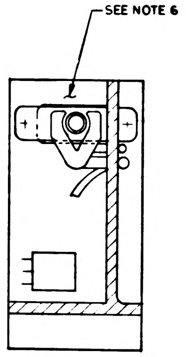
REVISIONS TDRR

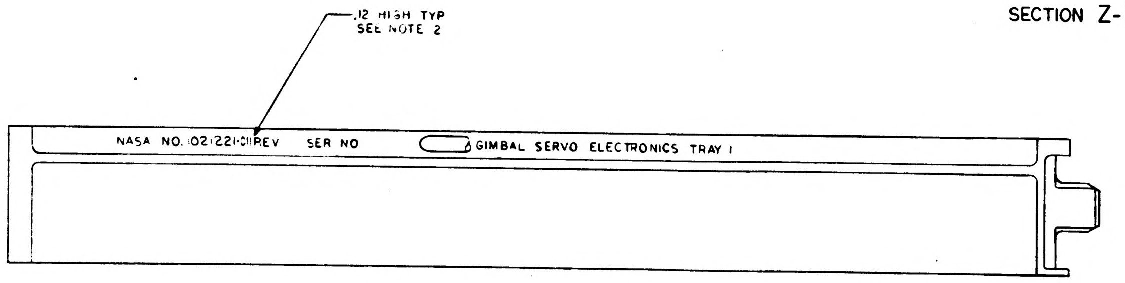
SYM	DESCRIPTION	DATE	APPROVA
A	REVISED PER TDRR 14321	20 NOV 64	
B	REVISED PER TDRR 16980	8 MAR 65	
C	REVISED PER TDRR 20118	21 JUN 65	


SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.350 .370 HEIGHT OF ENCAPSULATION
.320 MAX HARNESS HEIGHT
.360 MAX HARNESS HEIGHT
SEE NOTE 6
.480 .460 HEIGHT OF ENCAPSULATION
.440 MAX HARNESS HEIGHT
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO.S 20,21,22 23,24 & 26 TO FIND NO.1 BEFORE ENCAPSULATION.
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350 .370 REF
28 29
26
SEE NOTE 5
20
.480 .460 REF
Z
ENCAPSULATION HEIGHT FAR SIDE
1.681 1.691
.109 .119
ENCAPSULATION HEIGHT FAR SIDE
Z
16
SEE NOTES 9 AND 10
22
SEE NOTE 5
21
SEE NOTE 5
23
SEE NOTE 5
27
SEE NOTES 13 & 14
24
ASSEMBLE WIRE LIST AA TO FIND NO.1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP SEE NOTE 2
NASA NO. 1021221-011 REV SER NO
GIMBAL SERVO ELECTRONICS TRAY 1

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021221-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS — ANGLES —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-497
DRAWN R. Tomason DATE 28 MAY 64
CHECKED 9 Jun 64
APPROVAL 6/8/64
APPROVAL 8-June 64
9 July 64
NASA APPROVAL 7/14/64
MIT APPROVAL W Cuff 14 July

MANNED SPACECRAFT CENTE
HOUSTON, TEXAS

FRAME ASSEMBY
TRAY 1

CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO 1021211
SCALE 1/1
WT
SHEET 2 OF 2

1021211

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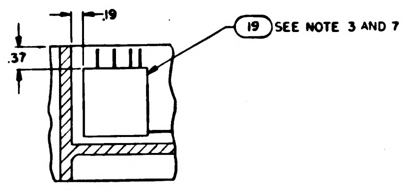
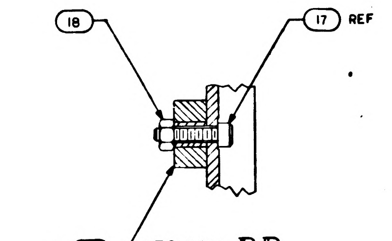
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	20 NOV 64	
B	REVISED PER TDRR 16980	8 MAR 65	JJ
C	REVISED PER TDRR 20118	21 JUN 65	JRS
D	REVISED PER TDRR 20787		Rwm

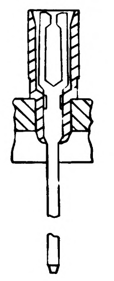


PARTIAL SECTION E-E

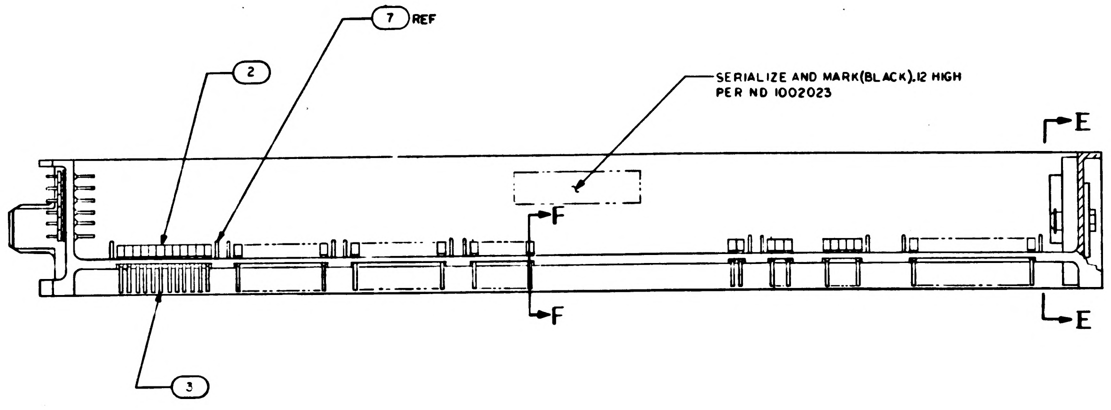


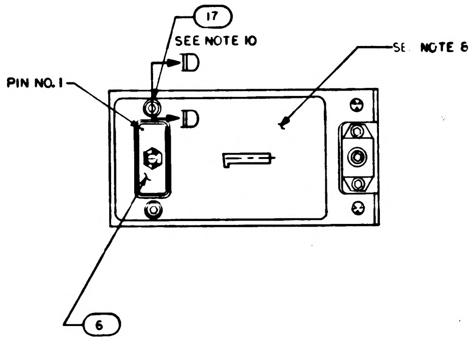
SECTION D-D

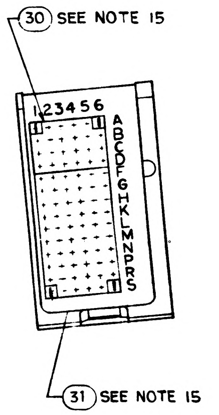
SCALE 2/1

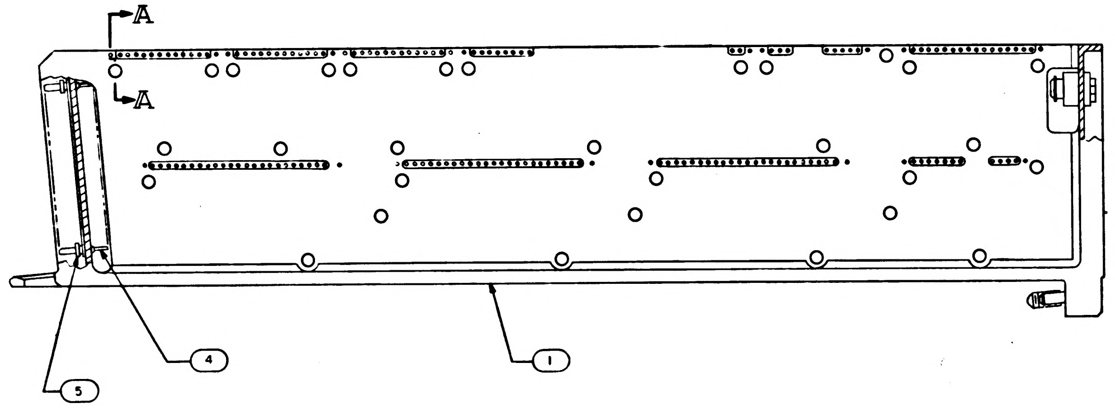


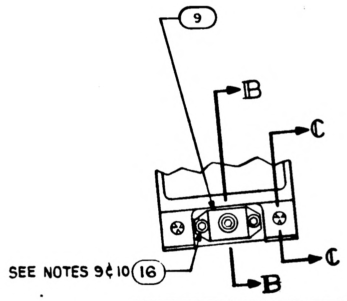
PARTIAL SECTION F-F
149 PLACES

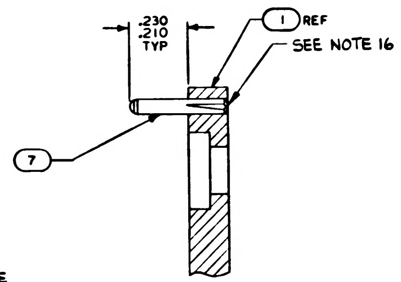






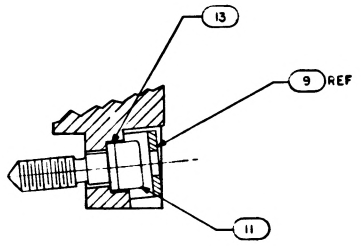






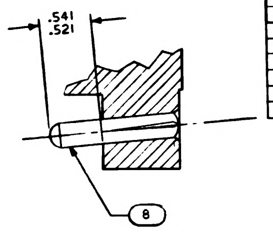
SECTION A-A

SCALE 4/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

TERMINATION CHART	
FROM	TO
45A1E7	45A1J1- 12
E8	- 3
E9	- 33
E10	- 17
45A1E11	45A1J1- 18
E1B	45A1J12- 2
E1E	45A1J12- 3
E1F	45A1J12- 4
E2B	45A1J12- 5
E2E	45A1J12- 6
E2F	45A1J12- 7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND 1002019 WHITE.
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 & NASA DRAWING 1010686.
4. ASSEMBLE ITEM NOS 2, 3, 4 & 5 PER ND 1002136.
5. BOND ITEM NOS 20, 21, 22, 23, 26 & 24 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY.
6. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NO.S 16 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 LB
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
12. ~~PROCURE~~ PER PS 1007141.
13. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 27 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
15. BOND ITEM NUMBERS 30 AND 31 TO ITEM NUMBER 5 PER ND 1002237
16. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND1002004, POTTING SIDE ONLY.
17. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE I.

QUANTITY REQUIRED							
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		31	1008552	GASKET
			1		30	1008551	GASKET
			1		29	1021204-007	CONTACT
			1		28	1021205-001	RECEPTACLE, DS TYPE
			AR		27	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		26	1021231	WIRING HARNESS E
			X		25	1008450	WIRING DIAGRAM
			1		24	1015741	WIRE LIST A-A
			1		23	1015740	WIRING HARNESS D
			1		22	1015739	WIRING HARNESS C
			1		21	1015738	WIRING HARNESS B
			1		20	1015737	WIRING HARNESS A
			1		19	1007088	BUFFER RESISTOR ASSY
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			~~30~~		~~15~~	~~MS171433~~	~~PIN, SPRING~~
			~~30~~		~~14~~	~~1004207~~	~~DRIVE CYLINDER~~
			1		13	1008099-2	WASHER
			~~60~~		~~12~~	~~1004206~~	~~WASHER, THRUST~~
			1		11	1008098	SCREW, SOCKET HEAD
			~~30~~		~~10~~	~~1008095~~	~~SCREW, JACK~~
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			20		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNE
			149		3	1006781-2	CONTACT, WRAPOST, FEMALE
			149		2	1006774	INSULATOR, WRAPOST, FEMALE
			1		1	1008101	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021221-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. Tamam DATE 28 MAY 64
CHECKED 9 JUL 64
APPROVAL Cosberg 6/8/64
APPROVAL 8/10/64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

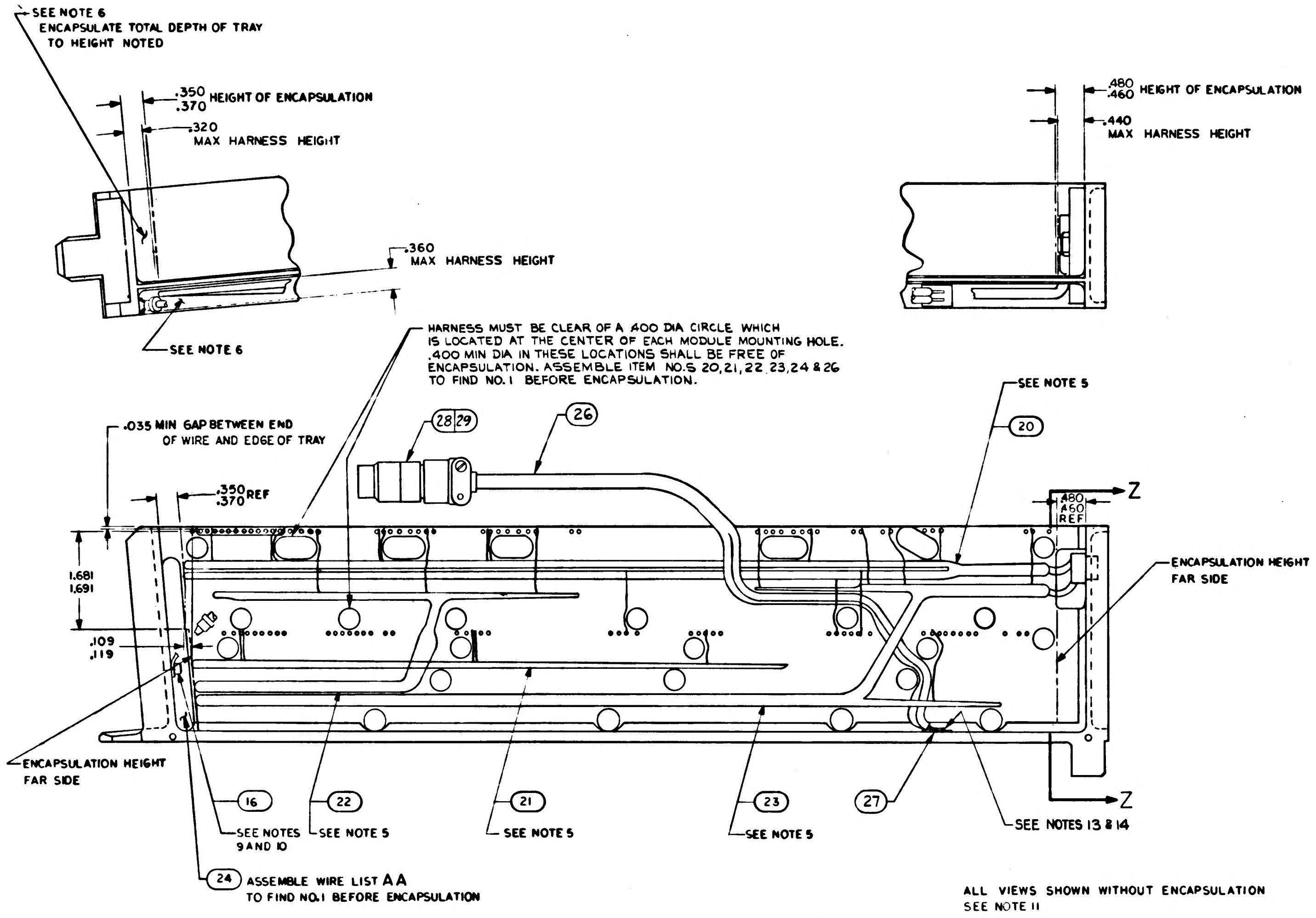
FRAME ASSEMBLY
TRAY 1

CODE IDENT NO 80230
SIZE E
1021211
SCALE 1:1
SHEET 2

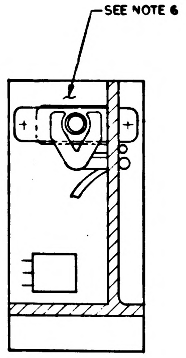
NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATE[illegible] ISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS O[illegible] ER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT [illegible] IN ANY WAY BE RELATED THERETO

REVISIONS TDRR

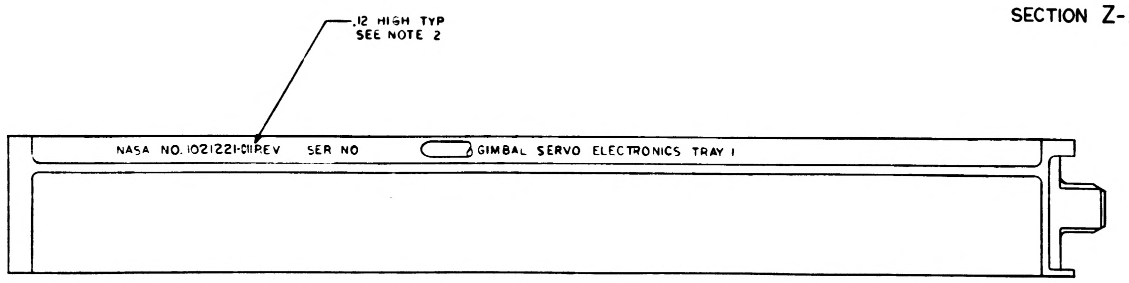
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	20 NOV 63	
B	REVISED PER TDRR 16980	8 MAR 65	
C	REVISED PER TDRR 20118	21 JUL 65	
D	REVISION STATUS CHANGED	21 JUL 65	


SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.350 .370 HEIGHT OF ENCAPSULATION
.320 MAX HARNESS HEIGHT
.360 MAX HARNESS HEIGHT
SEE NOTE 6
.480 .460 HEIGHT OF ENCAPSULATION
.440 MAX HARNESS HEIGHT
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO.S 20,21,22 23,24 & 26 TO FIND NO.1 BEFORE ENCAPSULATION.
SEE NOTE 5
20
28 29
26
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350 .370 REF
.480 .460 REF
Z
1.681 1.691
.109 .119
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
Z
16
SEE NOTES 9 AND 10
22
SEE NOTE 5
21
SEE NOTE 5
23
SEE NOTE 5
27
SEE NOTES 13 & 14
24
ASSEMBLE WIRE LIST AA TO FIND NO.1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021221-011 REV SER NO GIMBAL SERVO ELECTRONICS TRAY 1

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021221-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497

DRAWN C. Tonsen DATE 28 MAY 64
CHECKED [illegible] 4 JUN 64
APPROVAL [illegible] 6/18/64
APPROVAL [illegible] 8 JUNE 64
[illegible] 6 MAY 64
NASA APPROVAL [illegible] 7/14/64
MIT APPROVAL [illegible] 14 Jul 64

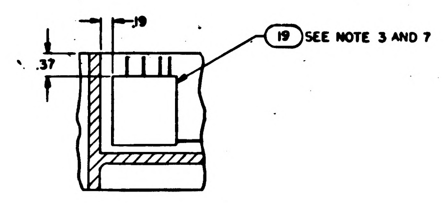
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 1

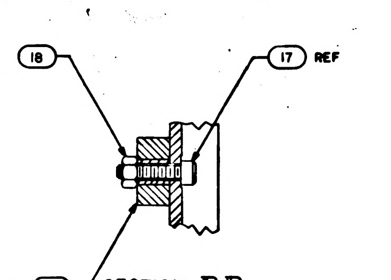
CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO 1021211
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10902			
SYM	DESCRIPTION	DATE	APPROVAL

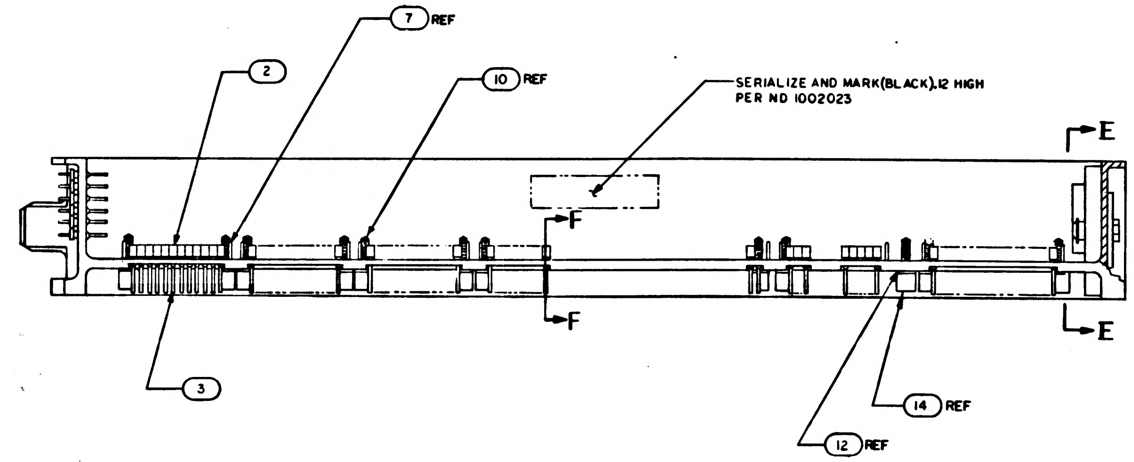


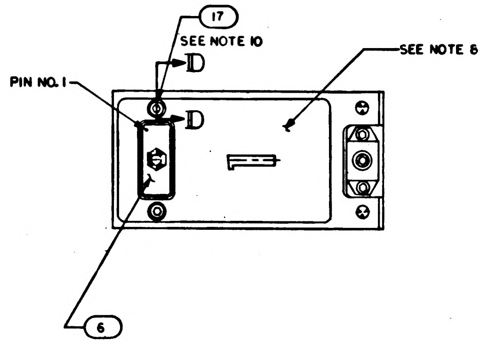
PARTIAL SECTION E-E

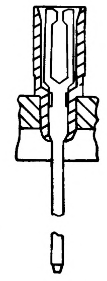


SECTION D-D

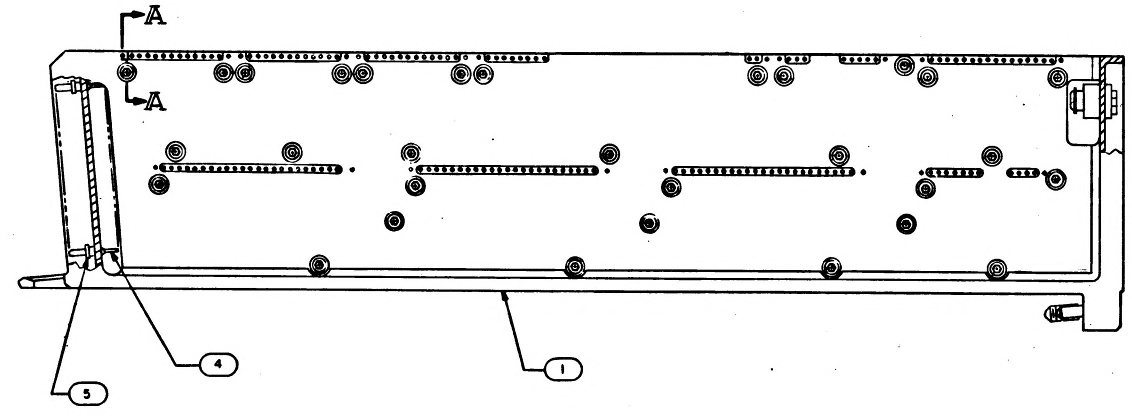
SCALE 2/1

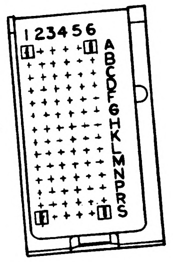


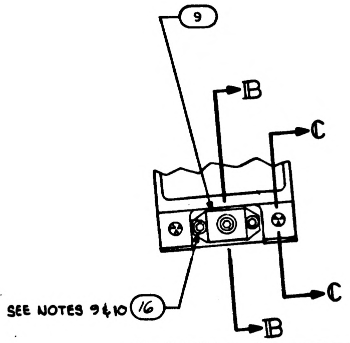


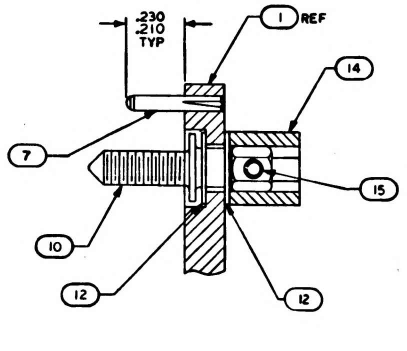


PARTIAL SECTION F-F
149 PLACES



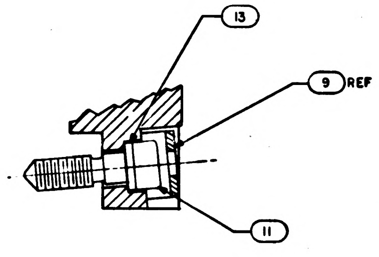






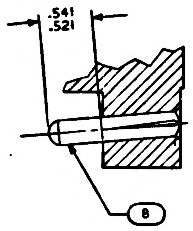
SECTION A-A

SCALE 4/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

TERMINATION CHART	
FROM	TO
45A1E7	45A1J1- 12
E8	- 3
E9	- 33
E10	- 17
45A1E11	45A1J1- 18
E1B	45A1J12- 2
E1E	45A1J12- 3
E1F	45A1J12- 4
E2B	45A1J12- 5
E2E	45A1J12- 6
E2F	45A1J12- 7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019 WHITE.
3. BOND ITEM NO 19 TO ITEM NO.1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136
5. BOND ITEM NO'S 20,21,22,23,26 & 24 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NO.S 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 LB
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
~~12. PROCURE~~ PER PS 1007141.
13. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 27 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.

QUANTITY REQUIRED			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		29	1021204-007	CONTACT
			1		28	1021205-001	RECEPTACLE, DS TYPE
			AR		27	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		26	1021231	WIRING HARNESS E
			X		25	1010091	WIRING DIAGRAM
			1		24	1015741	WIRE LIST A-A
			1		23	1015740	WIRING HARNESS D
			1		22	1015739	WIRING HARNESS C
			1		21	1015738	WIRING HARNESS B
			1		20	1015737	WIRING HARNESS A
			1		19	1007088	BUFFER RESISTOR ASSY
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			30		15	MS171433	PIN, SPRING
			30		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			60		12	1004206	WASHER THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			30		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			20		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			149		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			149		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008101	FRAME

LIST OF PARTS AND MATERIALS

1021221-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomson DATE 28 MAY 64
CHECKED 4 JUN 64
APPROVAL 6/8/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

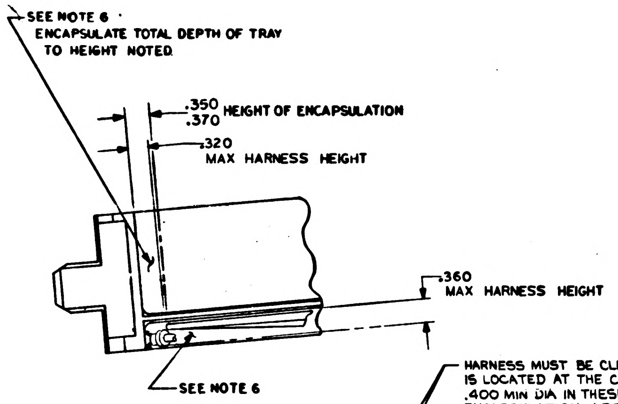
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

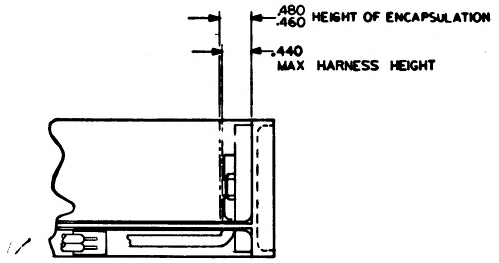
FRAME ASSEMBLY
TRAY 1

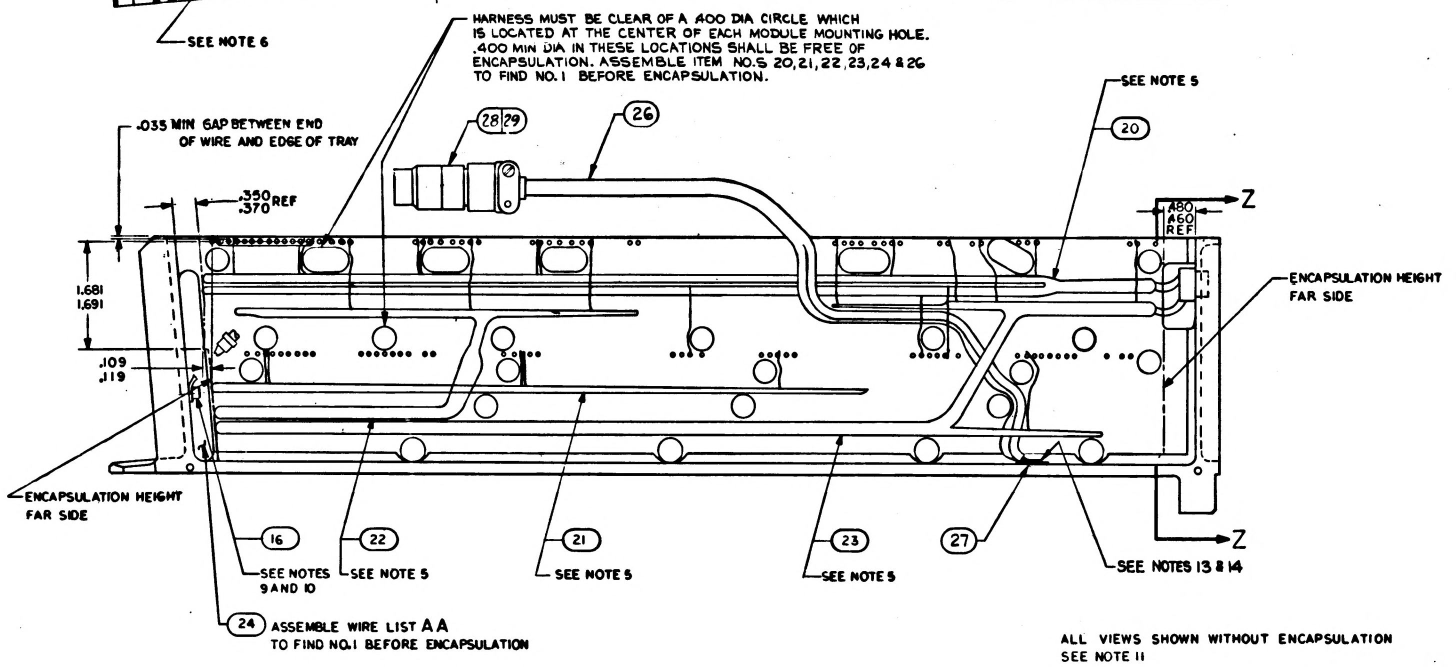
CODE IDENT NO.
SIZE E
1021211
SCALE 1:1
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

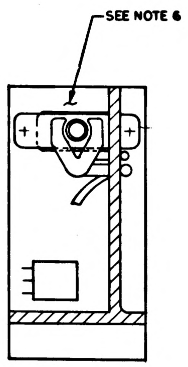
REVISIONS TDER 10907			
SYM	DESCRIPTION	DATE	APPROVAL


SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.350
.370 HEIGHT OF ENCAPSULATION
.320
MAX HARNESS HEIGHT
.360
MAX HARNESS HEIGHT
SEE NOTE 6

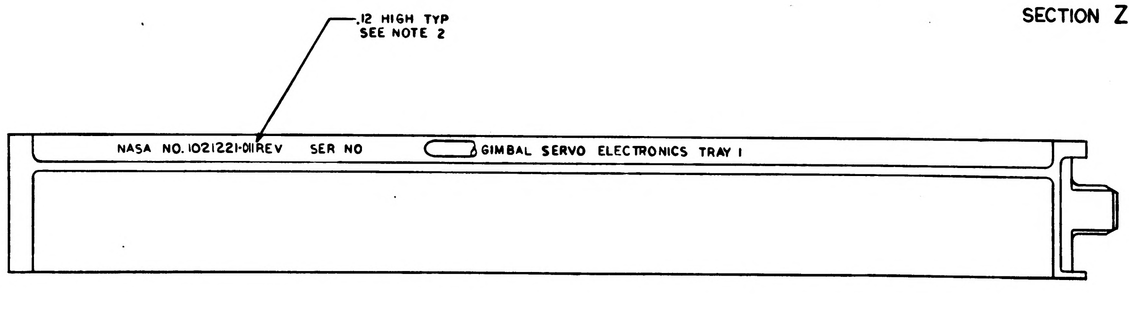

.480
.460 HEIGHT OF ENCAPSULATION
.440
MAX HARNESS HEIGHT


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO.S 20,21,22,23,24 & 26 TO FIND NO.1 BEFORE ENCAPSULATION.
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
28
29
26
SEE NOTE 5
20
.350
.370 REF
.480
.460
REF
Z
1.681
1.691
.109
.119
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 9 AND 10
22
SEE NOTE 5
21
SEE NOTE 5
23
SEE NOTE 5
27
Z
SEE NOTES 13 & 14
24
ASSEMBLE WIRE LIST AA TO FIND NO.1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021221-011 REV
SER NO
GIMBAL SERVO ELECTRONICS TRAY I

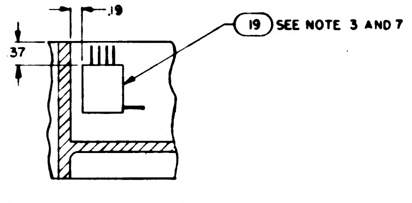
MARKING VIEW AFTER ENCAPSULATION

MASTER

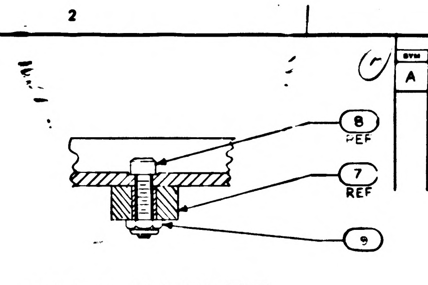
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

1021221-011	1021207-011	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS — ANGLES ± — DO NOT SCALE THIS DRAWING MATERIAL — HEAT TREATMENT — FINAL FINISH —	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497 DRAWN R. Tomasso DATE 28 MAY 64 CHECKED 1 Jun 64 APPROVAL 6/1/64 APPROVAL 8 Jun 64 D. A. ... 9 Jun 64 NASA APPROVAL 7/14/64 MIT APPROVAL	MANNED SPACECRAFT CENTER HOUSTON, TEXAS FRAME ASSEMBLY TRAY I CODE IDENT NO. SIZE E NASA DRAWING NO 1021211 SCALE 1/1 WT SHEET 2 OF 2
NEXT ASSY	USED ON			
APPLICATION				

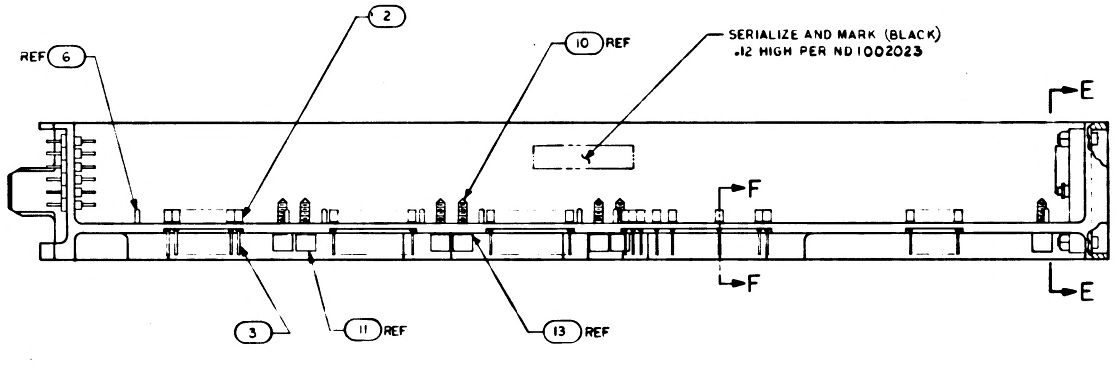
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	20 JUN 64	

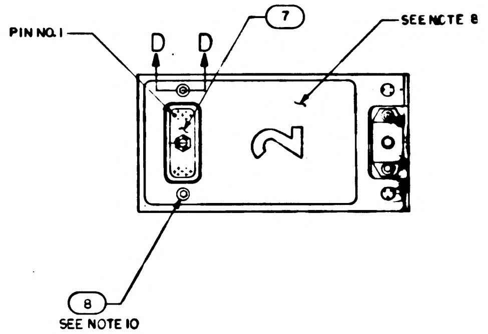


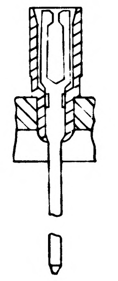
PARTIAL SECTION E-E



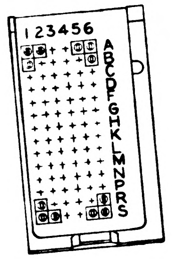
PARTIAL SECTION D-D
SCALE 2/1

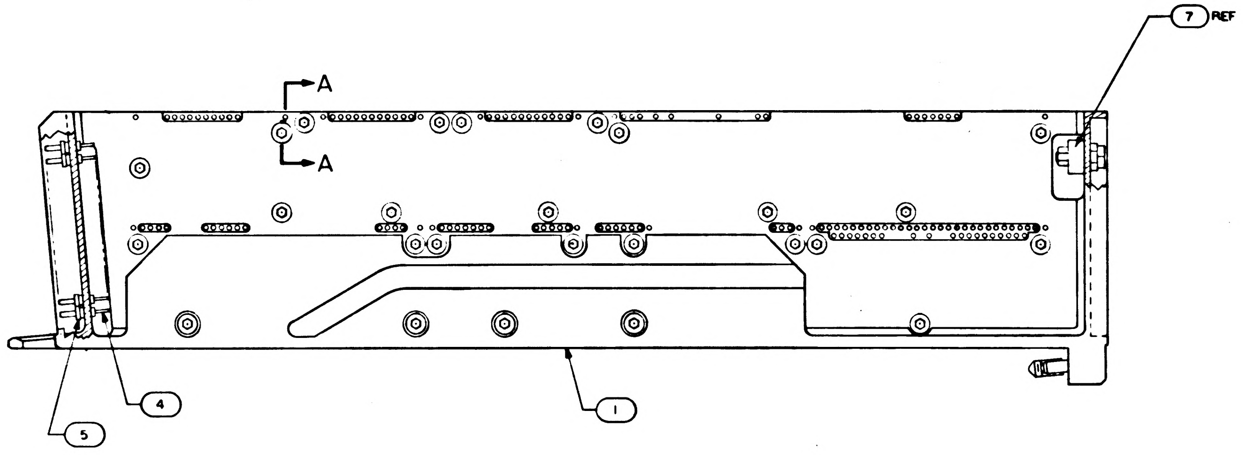


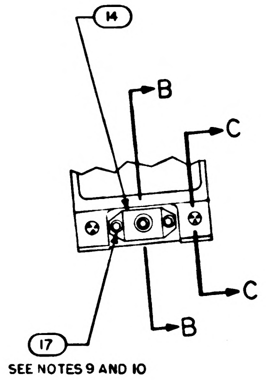


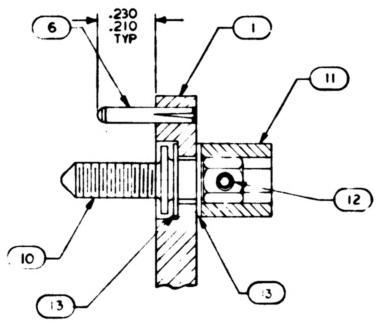


PARTIAL SECTION F-F
129 PLACES

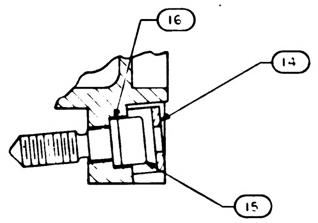




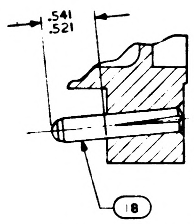




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. BOND ITEM NO.19 TO ITEM NO.1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136
5. BOND ITEM NO 20, 21 & 22 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO.17 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NUMBERS 8 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS1007142.
13. PRIOR TO INSTALLATION OF ITEM NO 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND1002187
14. AFTER INSTALLATION OF ITEM NO 22 COVER UNINSULATED SURFACES OF ITEM NO 22 WITH ND 1002004, TYPE I
15. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.

TERMINATION CHART	
FROM	TO
45A2E9	45A2J1-20
45A2E10	45A2J1-13
45A2E11	45A2J1-12
45A2E12	45A2J1-3
45A2E13	45A2J1-18
45A2E14	45A2J1-2
45A2E15	45A2J1-11
COND B1B	45A2J10-7
B1E	45A2J10-8
B1F	45A2J10-9
B2B	45A2J10-2
B2E	45A2J10-3
B2F	45A2J10 10
B3B	45A2J10-11
B3E	45A2J10 12
B3F	45A2J10 4
B4B	45A2J10-1
B4E	45A2J10-5
B4F	45A2J10 6

			1		25	1021205-006	RECEPTACLE DS TYPE
			☒		24	1008451	WIRING DIAGRAM
			AR		23	MIL-I-15126F	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021238	WIRING HARNESS "B"
			1		21	1015773	WIRE LIST "AA"
			1		20	1015772	WIRING HARNESS "A"
			1		19	1007091	BUFFER RESISTOR ASSY
			2		18	1010620-2	PIN GUIDE
			3		17	MS16995-10	SCREW CAP SOCKET HD
			1		16	1008099-2	WASHER
			1		15	1008098	SCREW, SOCKET HD
			1		14	1001317	RETAINER, JACK SCREW
			52		13	1004206	WASHER, THRUST
			26		12	MS171433	PIN, SPRING
			26		11	1004207	DRIVE CYLINDER
			26		10	1008095	SCREW JACK
			2		9	MS21045 C04	NUT SELF-LOCKING HEX
			2		8	MS16995-11	SCREW CAP SOCKET HEAD
			1		7	1010622-1	CONNECTOR, RECEPTACLE
			16		6	1010620-1	PIN, GUIDE
			84		5	1010383-1	INSULATOR, WRAPOST MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONN
			129		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			129		2	1006774	INSULATOR, WRAPOST FEMALE MIN
			1		1	1021232	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021222-011	1021207-011	-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS +.02 −.02 ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN 27 MAY 64 DATE
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 9 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 2

CODE IDENT NO
SIZE E
1021212
SCALE 1/1
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR

SYM	DESCRIPTION	DATE	APPROVAL
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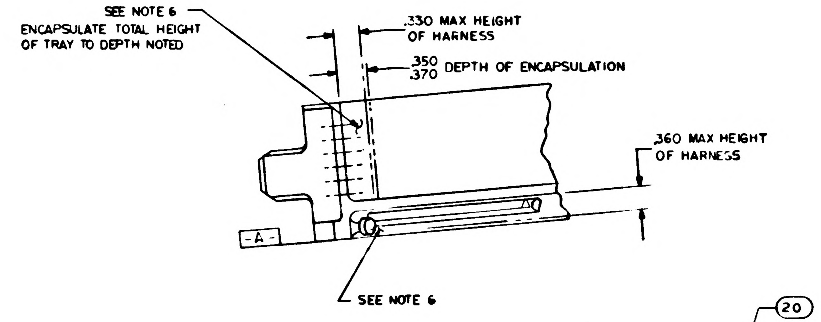
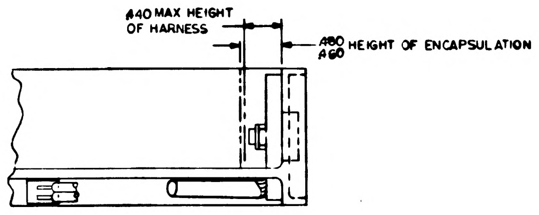
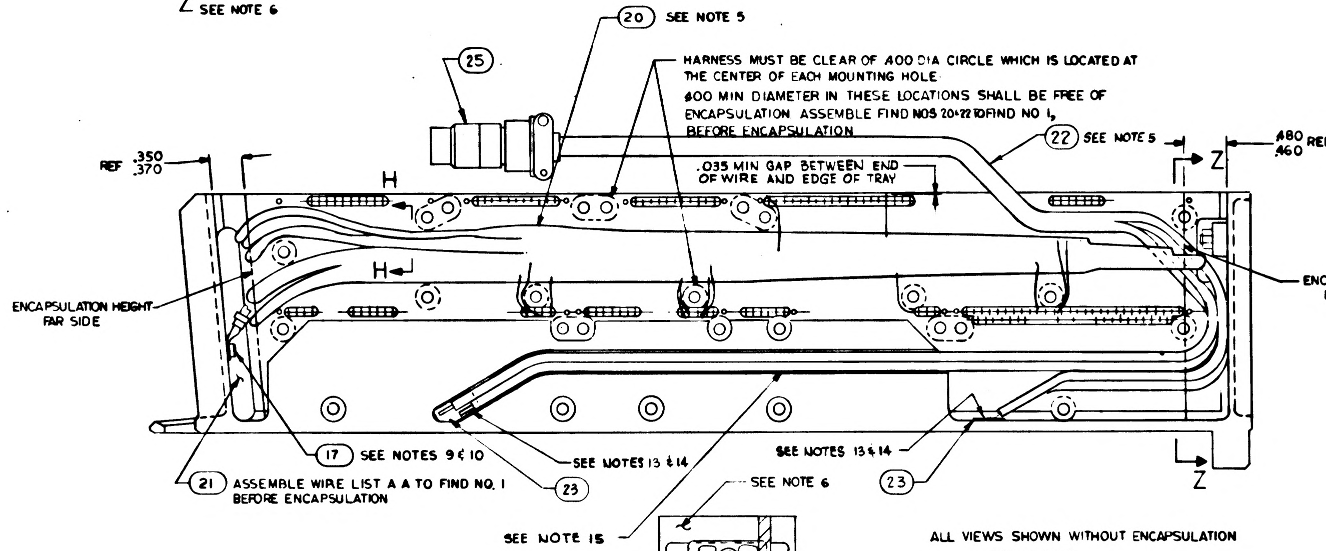
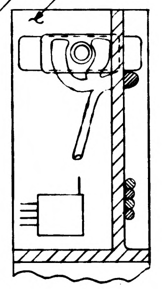

SEE NOTE 6
ENCAPSULATE TOTAL HEIGHT OF TRAY TO DEPTH NOTED
.330 MAX HEIGHT OF HARNESS
.350 .370 DEPTH OF ENCAPSULATION
.360 MAX HEIGHT OF HARNESS
-A-
SEE NOTE 6


.440 MAX HEIGHT OF HARNESS
.480 .460 HEIGHT OF ENCAPSULATION

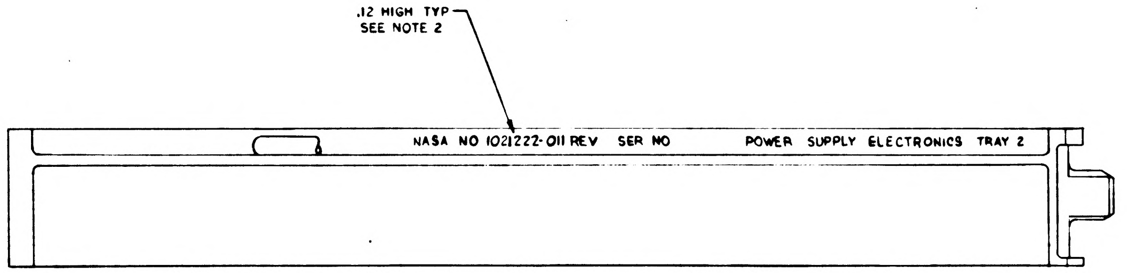

20 SEE NOTE 5
25
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION ASSEMBLE FIND NOS 20 & 22 TO FIND NO 1, BEFORE ENCAPSULATION
22 SEE NOTE 5
.480 .460 REF
REF .350 .370
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
H
H
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
17 SEE NOTES 9 & 10
SEE NOTES 13 & 14
SEE NOTES 13 & 14
21 ASSEMBLE WIRE LIST A A TO FIND NO. 1 BEFORE ENCAPSULATION
23
23
SEE NOTE 15

PARTIAL SECTION H-H



PARTIAL SECTION Z-Z

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11


.12 HIGH TYP SEE NOTE 2
NASA NO 1021222-011 REV SER NO
POWER SUPPLY ELECTRONICS TRAY 2

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

NEXT ASSY	USED ON
1021222-011	1021207-011

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. L. DATE
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 2

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021212
SCALE FULL
WT
SHEET 2 OF 2

NOTICE WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

SYM	DESCRIPTION	DATE	APPROVAL
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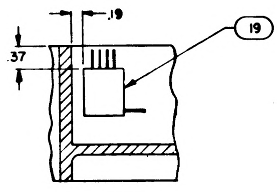
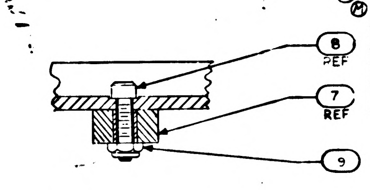
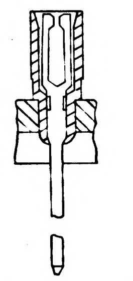
B	REVISED PER TDRR 16980	8 MAR 65	J J J



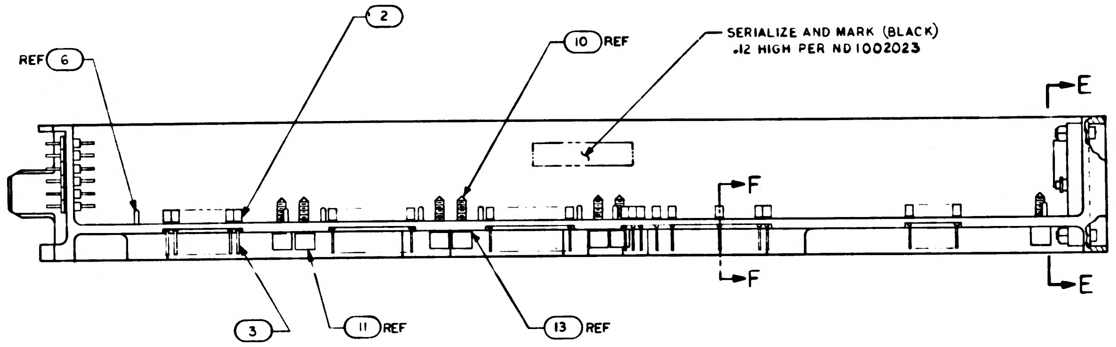
PARTIAL SECTION E-E

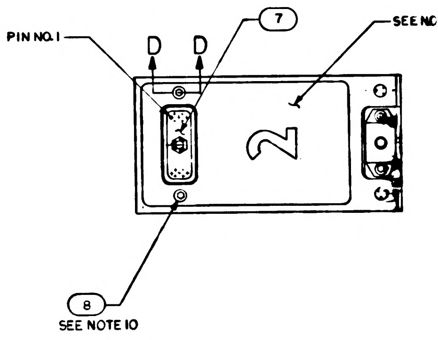


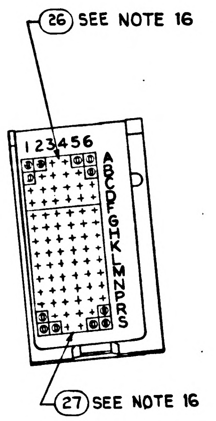
PARTIAL SECTION D-D
SCALE 2/1

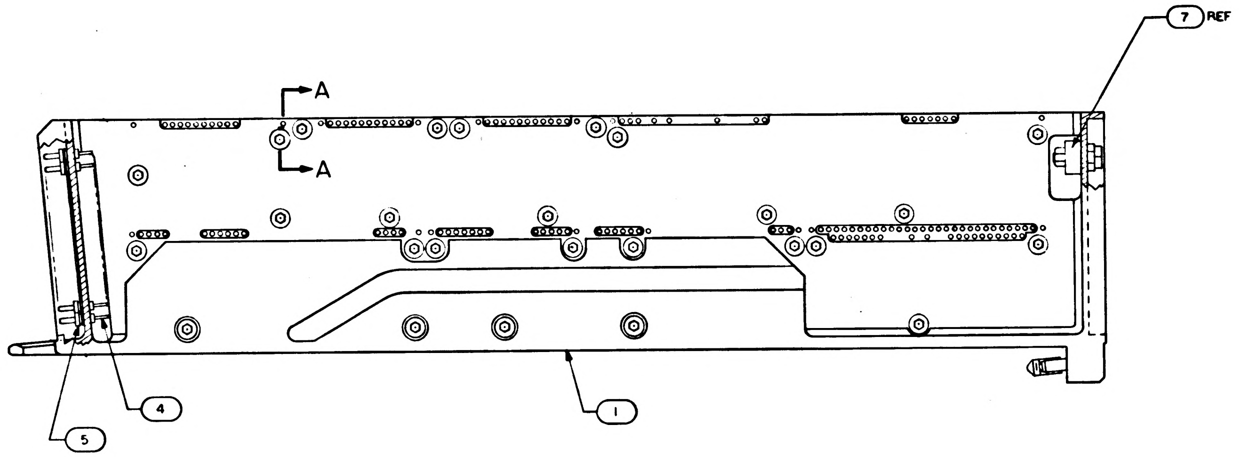


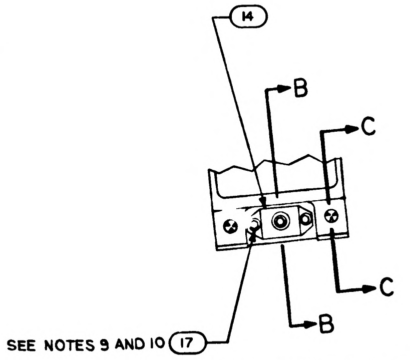
PARTIAL SECTION F-F
129 PLACES

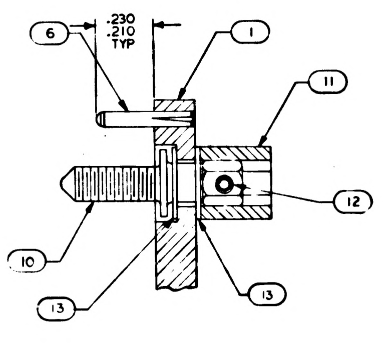




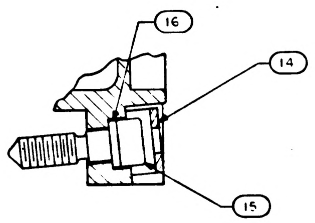




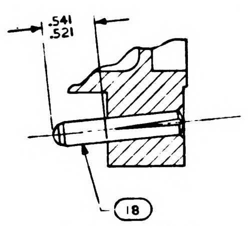




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND 1002019 WHITE
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND 1002136
5. BOND ITEM NO 20, 21 & 22 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 17 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NUMBERS 8 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007142.
13. PRIOR TO INSTALLATION OF ITEM NO 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187
14. AFTER INSTALLATION OF ITEM NO 22 COVER UNINSULATED SURFACES OF ITEM NO 22 WITH ND 1002004, TYPE I
15. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.
16 BOND ITEM NUMBERS 26 AND 27 TO ITEM NUMBER 5 PER ND 1002237.

TERMINATION CHART

FROM	TO
45A2E9	45A2J1-20
45A2E10	45A2J1-13
45A2E11	45A2J1-12
45A2E12	45A2J1-3
45A2E13	45A2J1-18
45A2E14	45A2J1-2
45A2E15	45A2J1-11
COND B1B	45A2J10-7
B1E	45A2J10-8
B1F	45A2J10-9
B2B	45A2J10-2
B2E	45A2J10-3
B2F	45A2J10 10
B3B	45A2J10-11
B3E	45A2J10 12
B3F	45A2J10 4
B4B	45A2J10-1
B4E	45A2J10-5
B4F	45A2J10 6

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		27	1008552	GASKET
			1		26	1008551	GASKET
			1		25	1021205-006	RECEPTACLE, DS TYPE
			╳		24	1008451	WIRING DIAGRAM
			AR		23	MIL-I-15126F	MYLAR TAPE TYPE MFT 2.5, .38WIDE
			1		22	1021238	WIRING HARNESS "B"
			1		21	1015773	WIRE LIST "AA"
			1		20	1015772	WIRING HARNESS "A"
			1		19	1007091	BUFFER RESISTOR ASSY
			2		18	1010620-2	PIN GUIDE
			3		17	MS16995-10	SCREW CAP SOCKET HD
			1		16	1008099-2	WASHER
			1		15	1008098	SCREW, SOCKET HD
			1		14	1001317	RETAINER, JACK SCREW
			52		13	1004206	WASHER, THRUST
			26		12	MS171433	PIN, SPRING
			26		11	1004207	DRIVE CYLINDER
			26		10	1008095	SCREW JACK
			2		9	MS21045 C04	NUT SELF-LOCKING HEX
			2		8	MS16995-11	SCREW, CAP SOCKET HEAD
			1		7	1010622-1	CONNECTOR, RECEPTACLE
			16		6	1010620-1	PIN, GUIDE
			84		5	1010383-1	INSULATOR, WRAPOST MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONN
			129		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			129		2	1006774	INSULATOR, WRAPOST FEMALE M
			1		1	1021232	FRAME

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021222-011	1021207-011	-011

APPLICATION
THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS +.02 -.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. LaLine DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 2

CODE IDENT NO.
SIZE E
1021212
SCALE 1:1
SHEET 1 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 109...

SYM	DESCRIPTION	DATE	APPROVAL
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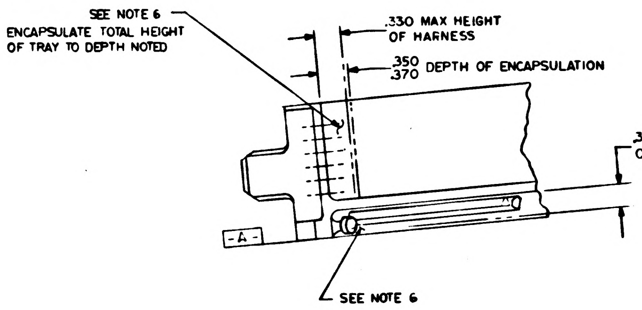
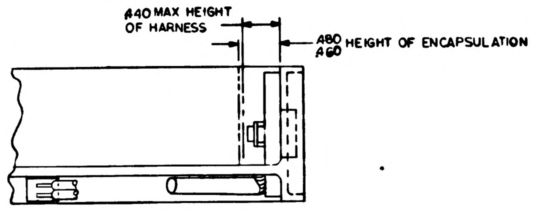
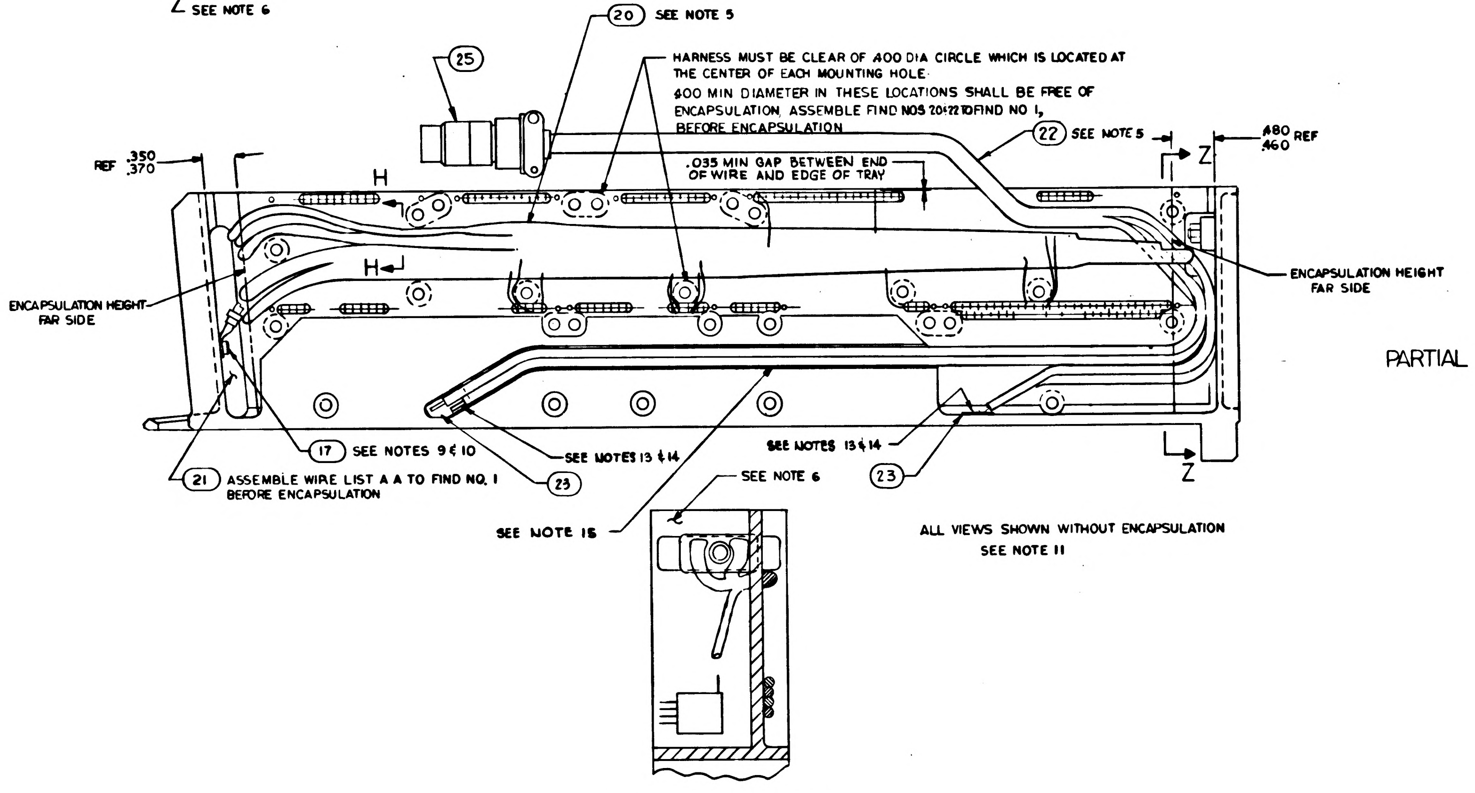
B	REVISED PER TDRR 16980	8 MAR 65	JJJ


SEE NOTE 6
ENCAPSULATE TOTAL HEIGHT OF TRAY TO DEPTH NOTED
.330 MAX HEIGHT OF HARNESS
.350 .370 DEPTH OF ENCAPSULATION
.360 MAX HEIGHT OF HARNESS
-A-
SEE NOTE 6

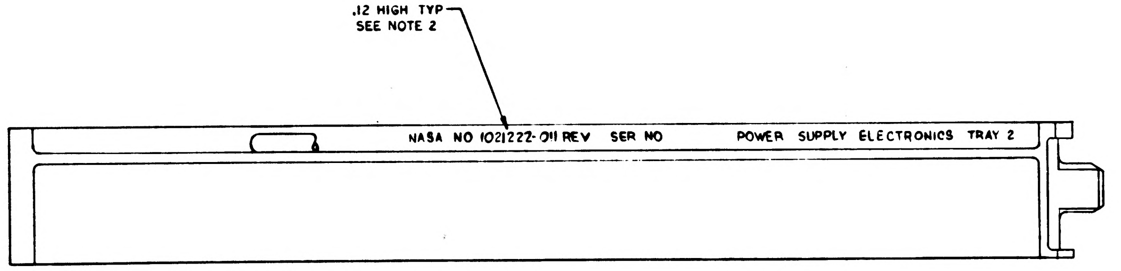

.440 MAX HEIGHT OF HARNESS
.480 .460 HEIGHT OF ENCAPSULATION


20 SEE NOTE 5
25
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MOUNTING HOLE.
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE FIND NOS 20 & 22 TO FIND NO 1, BEFORE ENCAPSULATION
22 SEE NOTE 5
.480 .460 REF
REF .350 .370
H
H
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
17 SEE NOTES 9 & 10
SEE NOTES 13 & 14
SEE NOTES 13 & 14
21 ASSEMBLE WIRE LIST A A TO FIND NO. 1 BEFORE ENCAPSULATION
23
23
SEE NOTE 15
SEE NOTE 6

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11

PARTIAL SECTION Z-Z

PARTIAL SECTION H-H


.12 HIGH TYP
SEE NOTE 2
NASA NO 1021222-011 REV SER NO
POWER SUPPLY ELECTRONICS TRAY 2

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1021222-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTR: ...
DRAWN R. LaBue DATE 27 MAY 64
CHECKED ... 5 JUN 64
APPROVAL R. Soberg 8 JUN 64
APPROVAL ... 8 JUN 64
... 8 JULY 64
NASA APPROVAL ...
MIT APPROVAL ...

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

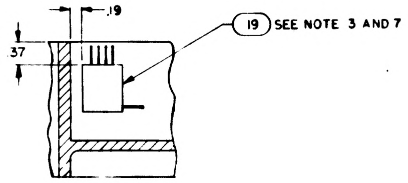
FRAME ASSEMBLY
TRAY 2

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021212
SCALE FULL
WT
SHEET 2 OF 2

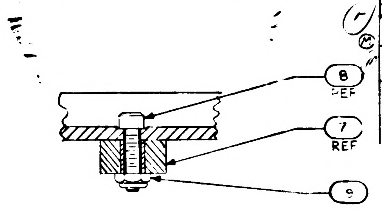
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

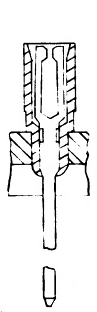
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	30 NOV 64	J
B	REVISED PER TDRR 16980	8 MAR 65	J J
C	REVISED PER TDRR 20118	21 JUN 65	J.C



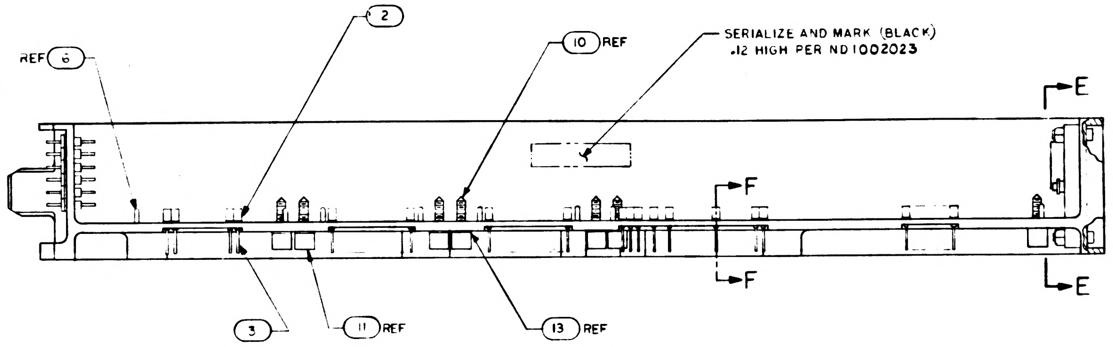
PARTIAL SECTION E-E

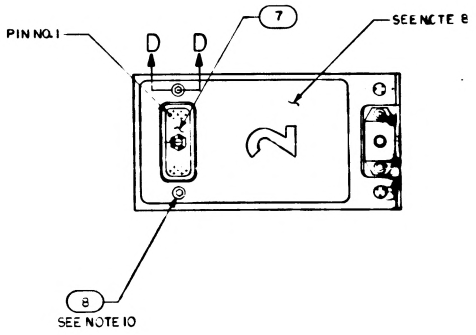


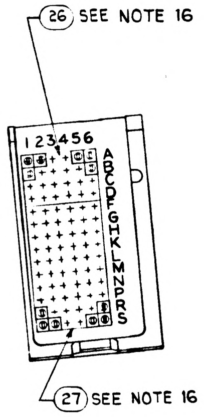
PARTIAL SECTION D-D
SCALE 2/1

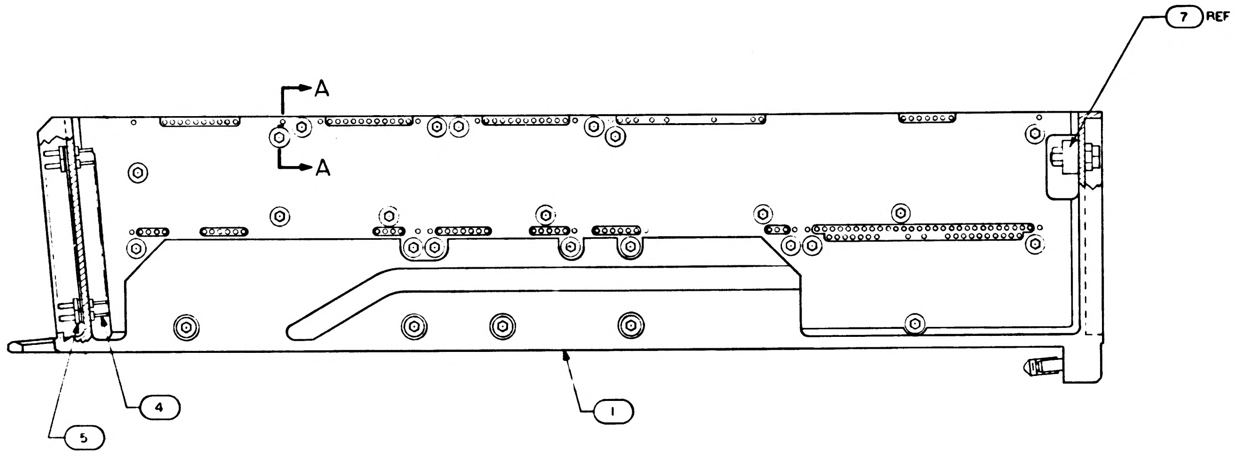


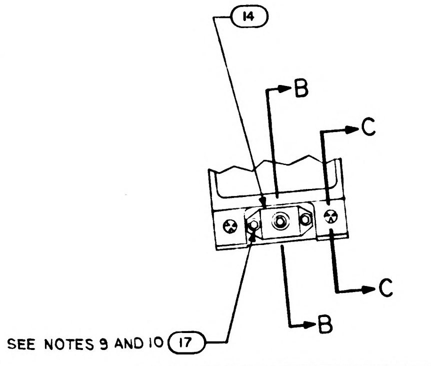
PARTIAL SECTION F-F
129 PLACES

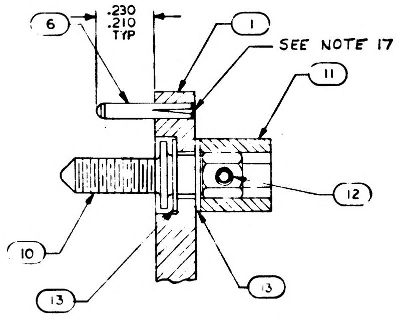




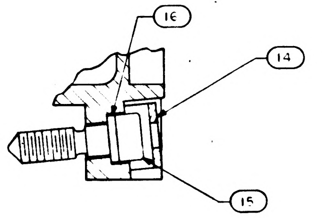




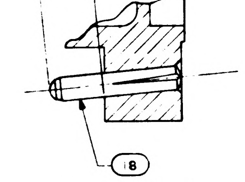




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019 WHITE
3. BOND ITEM NO. 5 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136.
5. BOND ITEM NO. 20, 21, 22 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .030 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUN DEPTH OF .030 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 17 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NUMBERS 8 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS1007142.
13. PRIOR TO INSTALLATION OF ITEM NO 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187
14. AFTER INSTALLATION OF ITEM NO 22 COVER UNINSULATED SURFACES OF ITEM NO 22 WITH ND 1002004, TYPE I
15. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.
16. BOND ITEM NUMBERS 26 AND 27 TO ITEM NUMBER 5 PER ND 1002237.
17. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND1002004, POTTING SIDE ONLY.
18. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

TERMINATION CHART

FROM	TO
45A2E9	45A2J1-20
45A2E10	45A2J1-13
45A2E11	45A2J1-12
45A2E12	45A2J1-3
45A2E13	45A2J1-18
45A2E14	45A2J1-2
45A2E15	45A2J1-11
COND B1B	45A2J10-7
B1E	45A2J10-8
B1F	45A2J10-9
B2B	45A2J10-2
B2E	45A2J10-3
B2F	45A2J10-10
B3B	45A2J10-11
B3E	45A2J10-12
B3F	45A2J10-4
B4B	45A2J10-1
B4E	45A2J10-5
B4F	45A2J10-6

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		27	1008552	GASKET
			1		26	1008551	GASKET
			1		25	1021205-006	RECEPTACLE, DS TYPE
			X		24	1008451	WIRING DIAGRAM
			AR		23	MIL-I-15126F	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021238	WIRING HARNESS "B"
			1		21	1015773	WIRE LIST "AA"
			1		20	1015772	WIRING HARNESS "A"
			1		19	1007091	BUFFER RESISTOR ASSY
			2		18	1010620-2	PIN GUIDE
			3		17	MS16995-10	SCREW CAP SOCKET HD
			1		16	1008099-2	WASHER
			1		15	1008098	SCREW, SOCKET HD
			1		14	1001317	RETAINER, JACK SCREW
			52		13	1004206	WASHER, THRUST
			26		12	MS171433	PIN SPRING
			26		11	1004207	DRIVE CYLINDER
			26		10	1008095	SCREW JACK
			2		9	MS21045 C04	NUT SELF LOCKING HEX
			2		8	MS16995-11	SCREW CAP SOCKET HEAD
			1		7	1010622-1	CONNECTOR RECEPTACLE
			16		6	MS16556-604	PIN, GUIDE
			84		5	1010383-1	INSULATOR, WRAPOST 14
			84		4	1010382-1	CONTACT, BLADE EDGE CON J
			129		3	1006781-2	CONTACT, WRAPOST, FEMALE M N
			129		2	1006774	INSULATOR, WRAPOST FEMALE M
			1		1	1021232	FRAME

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021222-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+
-	-.02	-

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN DATE [illegible] MAY 64
CHECKED 5 JUN 64
APPROVAL JUN 64
APPROVAL 9 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

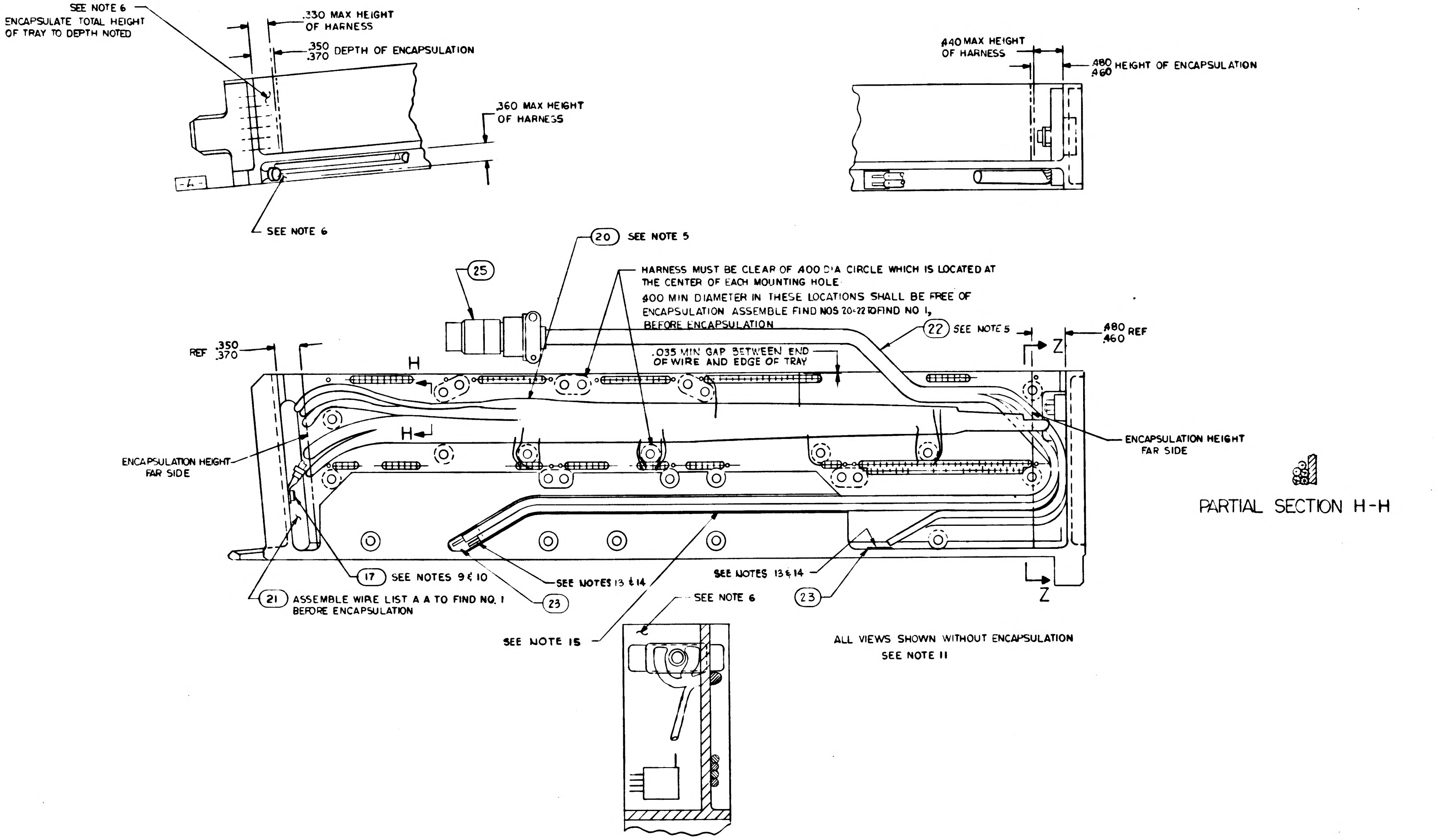
FRAME ASSEMBLY
TRAY 2

CODE IDENT NO 80230
SIZE E
1021212
SCALE 1/1
SHEET 1 of

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

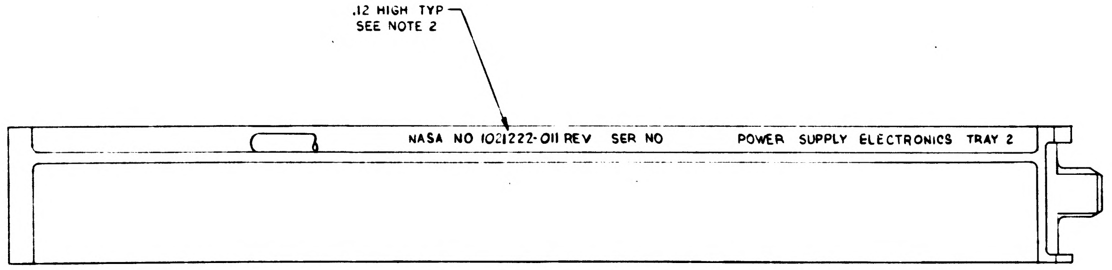
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	20 NOV 64	
B	REVISED PER TDRR 16980	8 MAR 65	J J
C	REVISION STATUS CHANGED	21 JUL 65	J.W


SEE NOTE 6
ENCAPSULATE TOTAL HEIGHT OF TRAY TO DEPTH NOTED
.330 MAX HEIGHT OF HARNESS
.350 .370 DEPTH OF ENCAPSULATION
.360 MAX HEIGHT OF HARNESS
SEE NOTE 6
.440 MAX HEIGHT OF HARNESS
.480 .460 HEIGHT OF ENCAPSULATION
20 SEE NOTE 5
25
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION
ASSEMBLE FIND NOS 20-22 TO FIND NO 1, BEFORE ENCAPSULATION
22 SEE NOTE 5
REF .350 .370
.480 .460 REF
Z
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
H
H
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
17 SEE NOTES 9 & 10
SEE NOTES 13 & 14
SEE NOTES 13 & 14
Z
21 ASSEMBLE WIRE LIST A A TO FIND NO. 1 BEFORE ENCAPSULATION
23
23
SEE NOTE 6
SEE NOTE 15
ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11

PARTIAL SECTION H-H

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO 1021222-011 REV SER NO POWER SUPPLY ELECTRONICS TRAY 2

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021222-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. Kline DATE
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
3 JUL 64
NASA APPROVAL
MIT APPROVAL

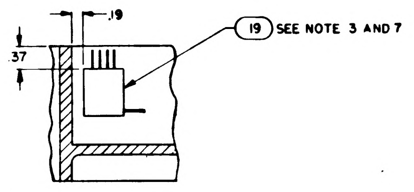
MANNED SPACECRAFT CE R
HOUSTON, TEXAS

FRAME ASSEME
TRAY 2

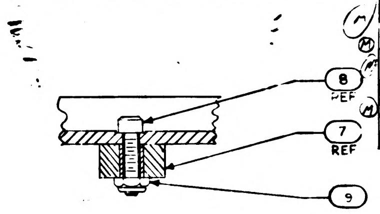
CODE IDENT NO	SIZE	NASA DRAW O
80230	E	10212 2

SCALE FULL WT SHEET 2 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

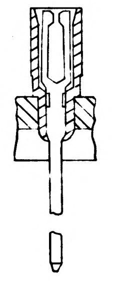


PARTIAL SECTION E-E

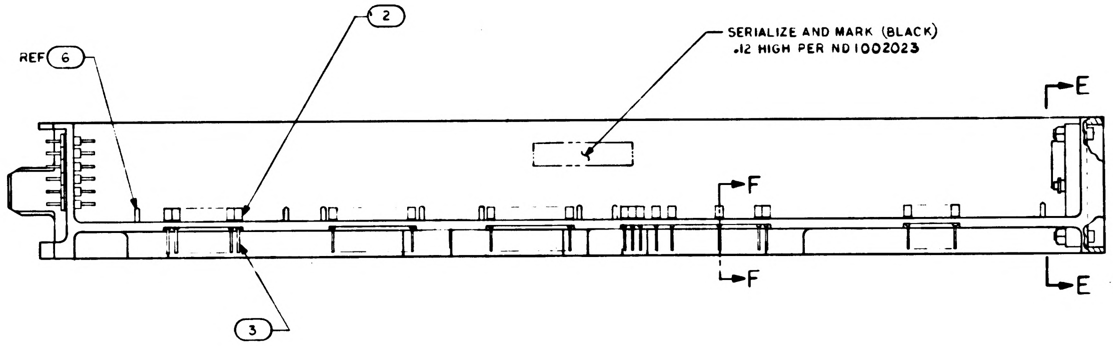


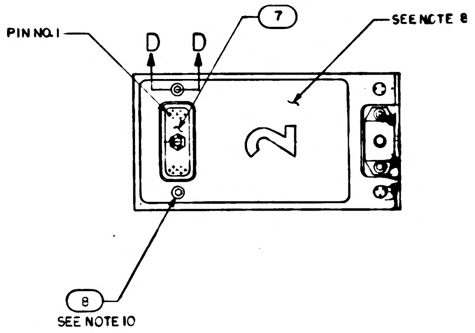
PARTIAL SECTION D-D
SCALE 2/1

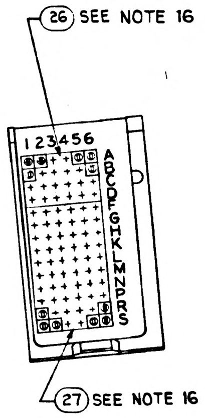
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	30 NOV 64	
B	REVISED PER TDRR 16980	8 MAR 65	J J
C	REVISED PER TDRR 20118	21 JUN 65	J.G.
D	REVISED PER TDRR 20787	JUL 65	R.W.

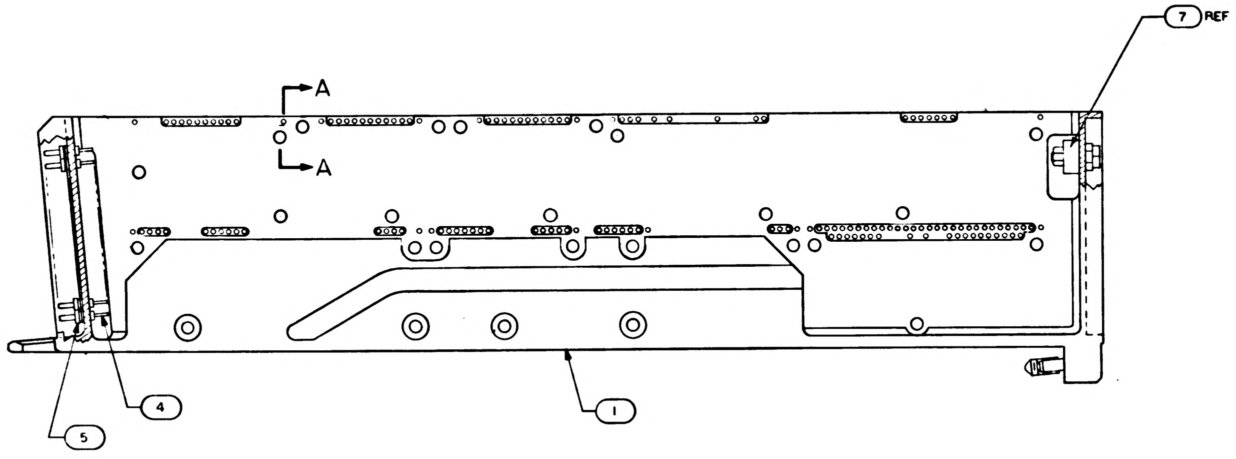


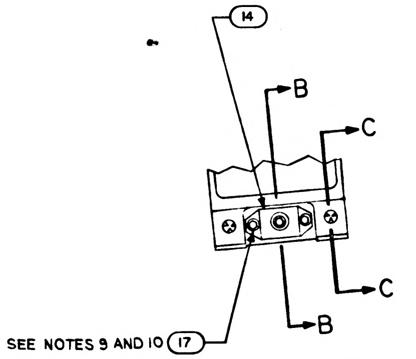
PARTIAL SECTION F-F
129 PLACES

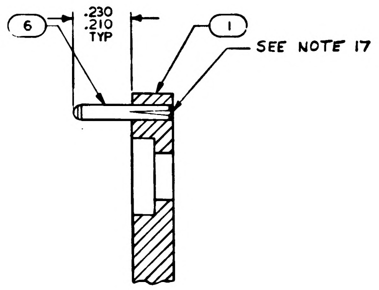




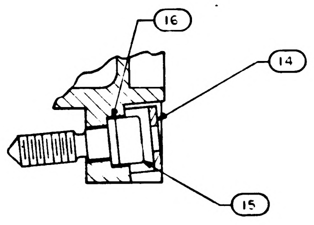




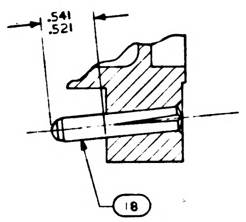




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND 1002019 WHITE
3. BOND ITEM NO. 3 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136.
5. BOND ITEM NO. 20,21,22 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUN DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 17 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NUMBERS 8 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005.
ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007142.
13. PRIOR TO INSTALLATION OF ITEM NO 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187
14. AFTER INSTALLATION OF ITEM NO 22 COVER UNINSULATED SURFACES OF ITEM NO 22 WITH ND 1002004, TYPE I
15. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.
16. BOND ITEM NUMBERS 26 AND 27 TO ITEM NUMBER 5 PER ND 1002237.
17. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND1002004, POTTING SIDE ONLY.
18. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

TERMINATION CHART

FROM	TO
45A2E9	45A2J1-20
45A2E10	45A2J1-13
45A2E11	45A2J1-12
45A2E12	45A2J1-3
45A2E13	45A2J1-18
45A2E14	45A2J1-2
45A2E15	45A2J1-11
COND B1B	45A2J10-7
B1E	45A2J10-8
B1F	45A2J10-9
B2B	45A2J10-2
B2E	45A2J10-3
B2F	45A2J10-10
B3B	45A2J10-11
B3E	45A2J10-12
B3F	45A2J10-4
B4B	45A2J10-1
B4E	45A2J10-5
B4F	45A2J10-6

LIST OF PARTS AND MATERIALS

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		27	1008552	GASKET
			1		26	1008551	GASKET
			1		25	1021205-006	RECEPTACLE DS TYPE
			X		24	1008451	WIRING DIAGRAM
			AR		23	MIL-I-15126F	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021238	WIRING HARNESS "B"
			1		21	1015773	WIRE LIST "AA"
			1		20	1015772	WIRING HARNESS "A"
			1		19	1007091	BUFFER RESISTOR ASSY
			2		18	1010620-2	PIN GUIDE
			3		17	MS16995-10	SCREW CAP SOCKET HD
			1		16	1008099-2	WASHER
			1		15	1008098	SCREW, SOCKET HD
			1		14	1001317	RETAINER, JACK SCREW
			~~52~~		~~13~~	~~1004206~~	~~WASHER, THRUST~~
			~~26~~		~~12~~	~~MS17433~~	~~PIN SPRING~~
			~~26~~		~~11~~	~~1004207~~	~~DRIVE CYLINDER~~
			~~26~~		~~10~~	~~1008095~~	~~SCREW JACK~~
			2		9	MS21045 C04	NUT SELF-LOCKING HEX
			2		8	MS16995-11	SCREW CAP SOCKET HEAD
			1		7	1010622-1	CONNECTOR RECEPTACLE
			16		6	MS16556-604	PIN, GUIDE
			84		5	1010383-1	INSULATOR WRAPOST MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONN
			129		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			129		2	1006774	INSULATOR, WRAPOST FEMALE MIN
			1		1	1021232	FRAME

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021222-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS +.02 -.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 9 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

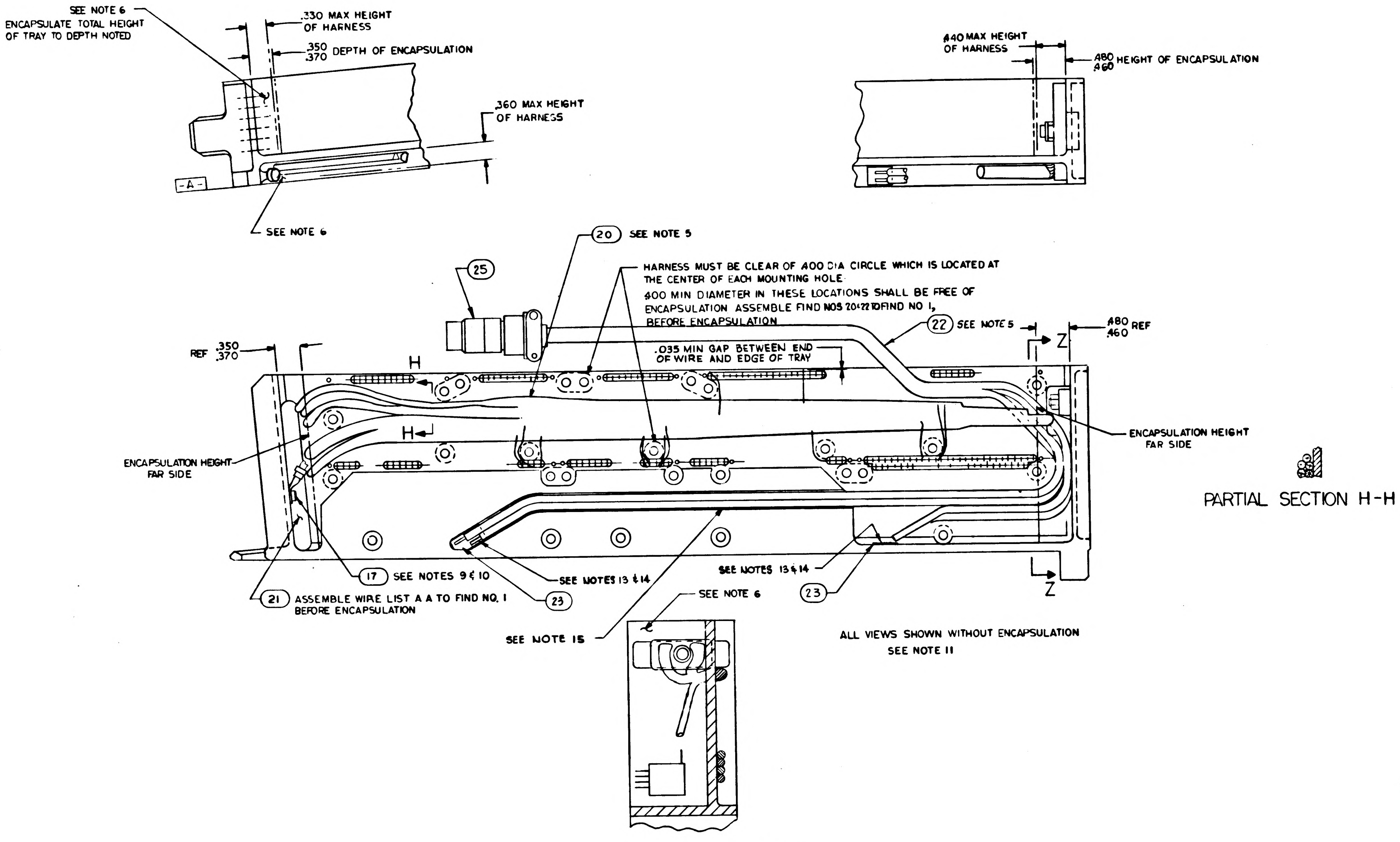
FRAME ASSEMBLY
TRAY 2

CODE IDENT NO. 80230
SIZE E
1021212
SCALE 1/1
SHEET 1 OF 2

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

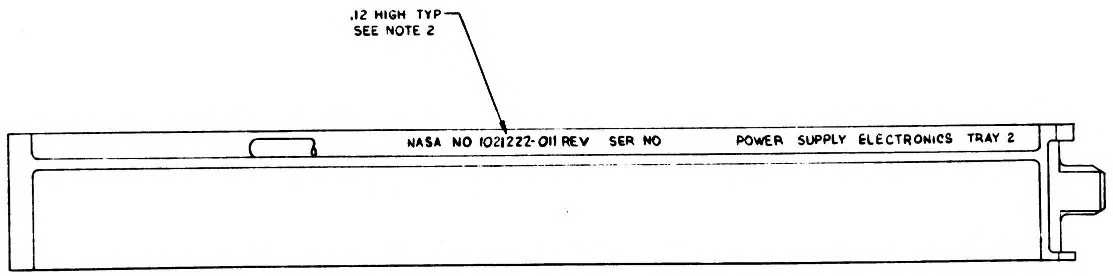
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	20 NOV 64	
B	REVISED PER TDRR 16980	8 MAR 65	J J
C	REVISION STATUS CHANGED	21 JUN 65	
D	REVISION STATUS CHANGED	21 JUL 65	R.W.


SEE NOTE 6
ENCAPSULATE TOTAL HEIGHT OF TRAY TO DEPTH NOTED
.330 MAX HEIGHT OF HARNESS
.350 .370 DEPTH OF ENCAPSULATION
.360 MAX HEIGHT OF HARNESS
-A-
SEE NOTE 6
.440 MAX HEIGHT OF HARNESS
.480 .460 HEIGHT OF ENCAPSULATION
(20) SEE NOTE 5
(25)
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION ASSEMBLE FIND NOS 20 & 22 TO FIND NO 1, BEFORE ENCAPSULATION
(22) SEE NOTE 5
.480 .460 REF
Z
REF .350 .370
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
H
H
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
(17) SEE NOTES 9 & 10
(21) ASSEMBLE WIRE LIST A A TO FIND NO. 1 BEFORE ENCAPSULATION
SEE NOTES 13 & 14
(23)
SEE NOTES 13 & 14
(23)
Z
SEE NOTE 6
SEE NOTE 15
ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11

PARTIAL SECTION H-H

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO 1021222-011 REV SER NO
POWER SUPPLY ELECTRONICS TRAY 2

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021222-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. Lollins DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
3 JUL 64
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

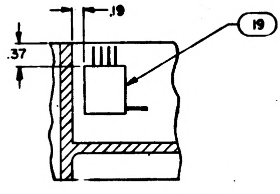
FRAME ASSEMBLY
TRAY 2

CODE IDENT NO	SIZE	NASA DRAWING NO
80230	E	1021212

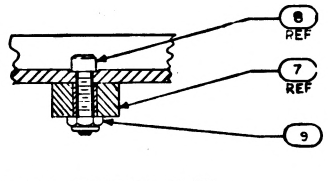
SCALE FULL WT SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

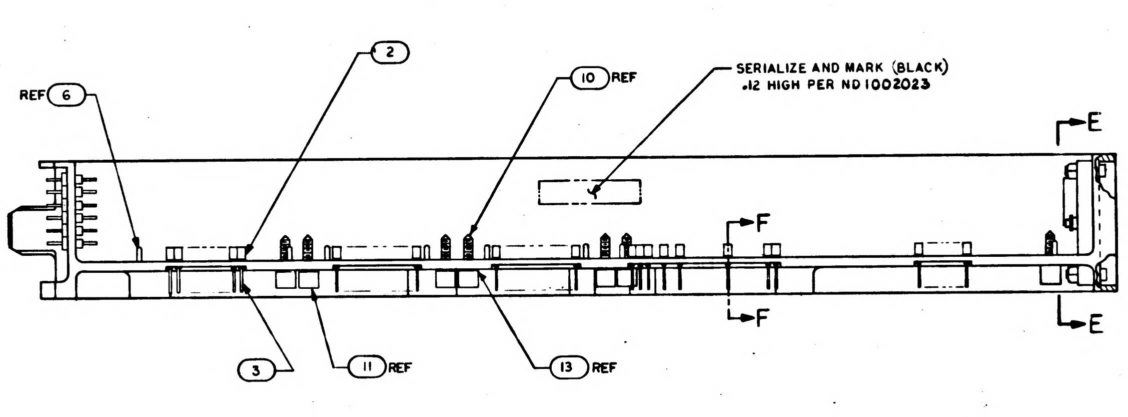
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL

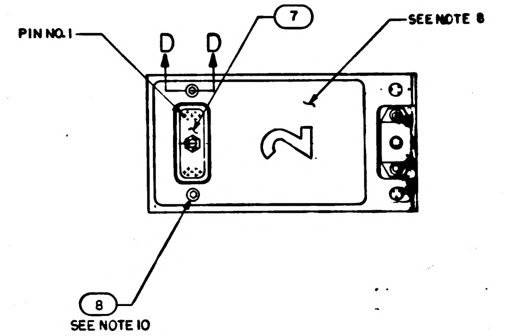


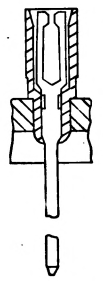
PARTIAL SECTION E-E



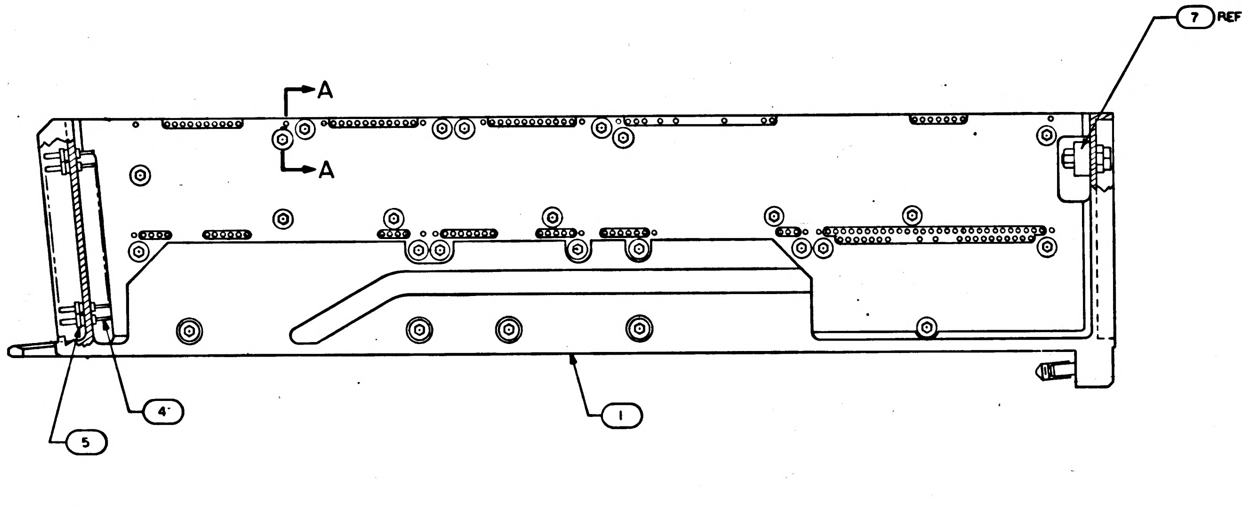
PARTIAL SECTION D-D
SCALE 2/1

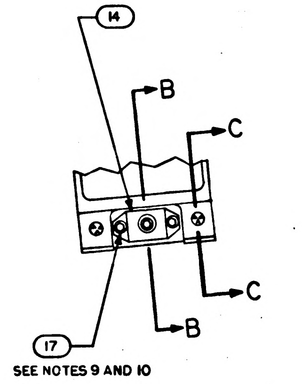


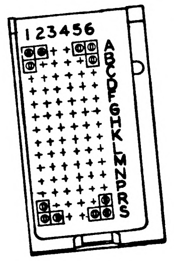


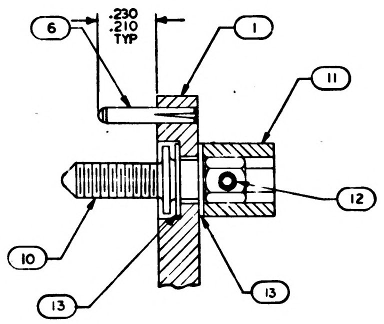


PARTIAL SECTION F-F
129 PLACES

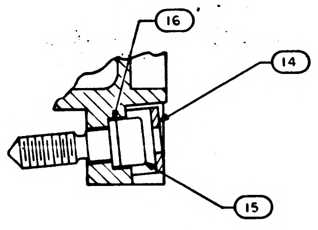




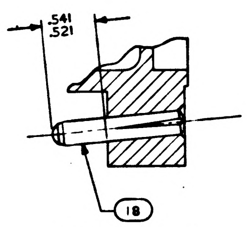




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
4. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND 1002136
5. BOND ITEM NO 20, 21 & 22 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 17 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NUMBERS 8 AND 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007142.
13. PRIOR TO INSTALLATION OF ITEM NO 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187
14. AFTER INSTALLATION OF ITEM NO 22 COVER UNINSULATED SURFACES OF ITEM NO 22 WITH ND 1002004, TYPE 1
15. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.

MASTER

TERMINATION CHART	
FROM	TO
45A2E9	45A2J1-20
45A2E10	45A2J1-13
45A2E11	45A2J1-12
45A2E12	45A2J1-3
45A2E13	45A2J1-18
45A2E14	45A2J1-2
45A2E15	45A2J1-11
COND B1B	45A2J10-7
B1E	45A2J10-8
B1F	45A2J10-9
B2B	45A2J10-2
B2E	45A2J10-3
B2F	45A2J10 10
B3B	45A2J10-11
B3E	45A2J10 12
B3F	45A2J10 4
B4B	45A2J10-1
B4E	45A2J10-5
B4F	45A2J10 6

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		25	1021205-006	RECEPTACLE, DS TYPE
			☒		24	1010092	WIRING DIAGRAM
			AR		23	MIL-I-15126F	MYLAR TAPE TYPE MFT 25, .38 WIDE
			1		22	1021238	WIRING HARNESS "B"
			1		21	1015773	WIRE LIST "AA"
			1		20	1015772	WIRING HARNESS "A"
			1		19	1007091	BUFFER RESISTOR ASSY
			2		18	1010620-2	PIN GUIDE
			3		17	MS16995-10	SCREW, CAP SOCKET HD
			1		16	1008099-2	WASHER
			1		15	1008098	SCREW, SOCKET HD
			1		14	1001317	RETAINER, JACK SCREW
			52		13	1004206	WASHER, THRUST
			26		12	MS171433	PIN, SPRING
			26		11	1004207	DRIVE CYLINDER
			26		10	1008095	SCREW, JACK
			2		9	MS21045 C04	NUT, SELF-LOCKING HEX
			2		8	MS16995-11	SCREW, CAP SOCKET HEAD
			1		7	1010622-1	CONNECTOR, RECEPTACLE
			16		6	1010620-1	PIN, GUIDE
			84		5	1010383-1	INSULATOR, WRAPOST MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONN
			129		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			129		2	1006774	INSULATOR, WRAPOST FEMALE
			1		1	1021222	FRAME
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021222-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+
-	-.02	-

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. LaDue DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

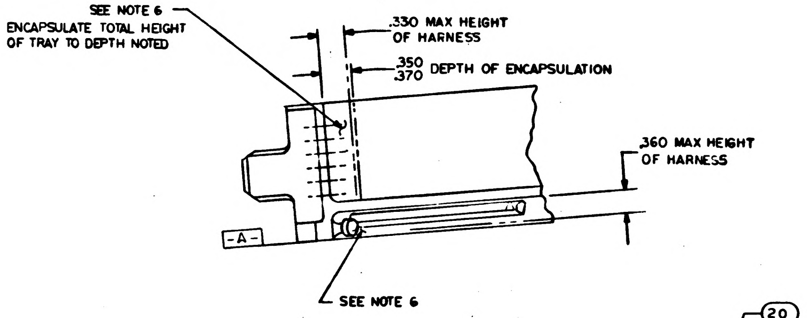
FRAME ASSEMBLY
TRAY 2

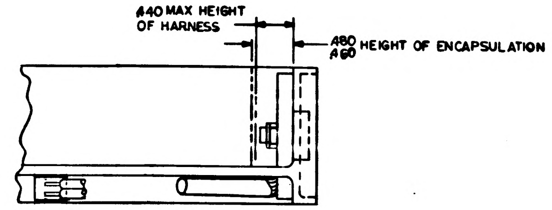
CODE IDENT NO.
SIZE E
1021212
SCALE 1:1
SHEET 1 OF 2

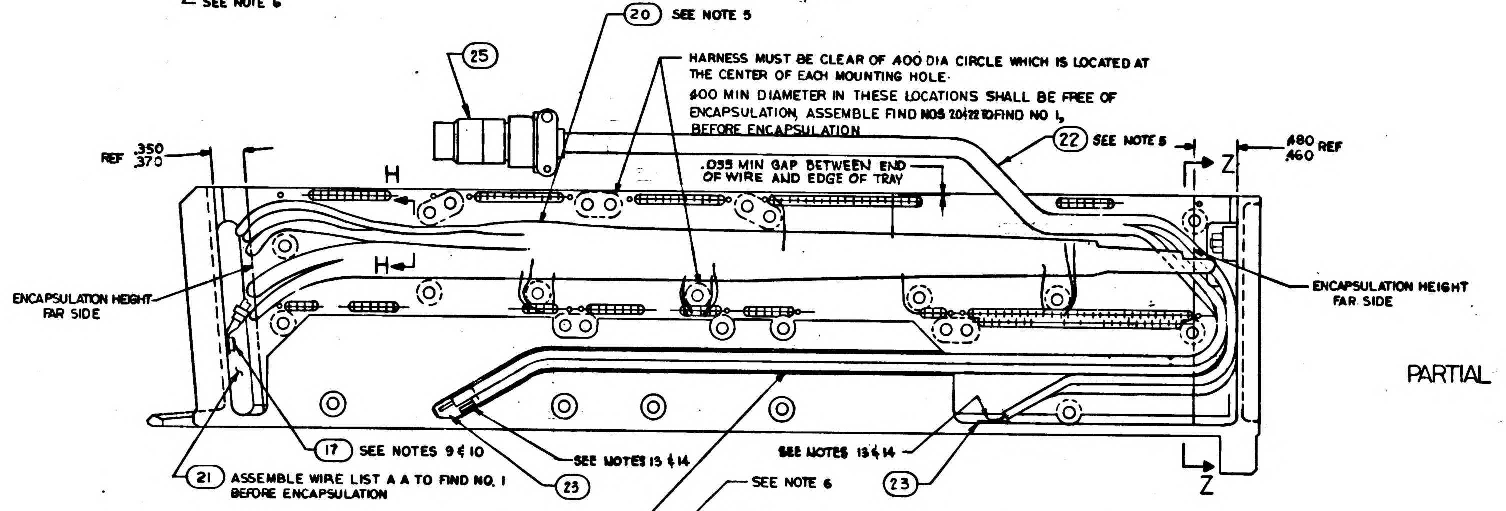
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 12937

SYM	DESCRIPTION	DATE	APPROVAL

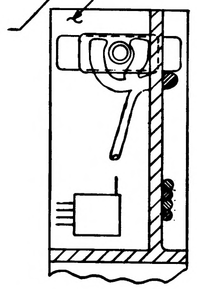

SEE NOTE 6
ENCAPSULATE TOTAL HEIGHT OF TRAY TO DEPTH NOTED
.330 MAX HEIGHT OF HARNESS
.350 .370 DEPTH OF ENCAPSULATION
.360 MAX HEIGHT OF HARNESS
-A-
SEE NOTE 6


.440 MAX HEIGHT OF HARNESS
.480 .460 HEIGHT OF ENCAPSULATION

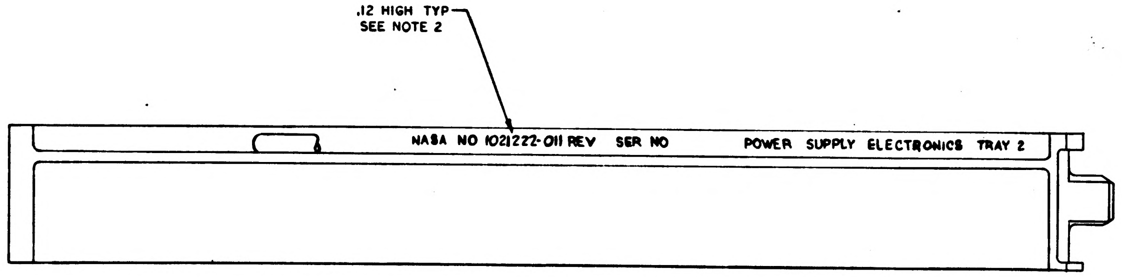

20 SEE NOTE 5
25
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MOUNTING HOLE.
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION, ASSEMBLE FIND NOS 20&22 TO FIND NO 1, BEFORE ENCAPSULATION
22 SEE NOTE 5
REF .350 .370
.480 .460 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
H
H
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
17 SEE NOTES 9 & 10
SEE NOTES 13 & 14
SEE NOTES 13 & 14
21 ASSEMBLE WIRE LIST A A TO FIND NO. 1 BEFORE ENCAPSULATION
23
23
SEE NOTE 15
SEE NOTE 6

PARTIAL SECTION H-H

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO 1021222-011 REV SER NO
POWER SUPPLY ELECTRONICS TRAY 2

MARKING VIEW AFTER ENCAPSULATION

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1021222-011	1021807-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTR. 1109-497
DRAWN R. LeBlanc DATE 5 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
D. B. 8 JULY 64
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 2

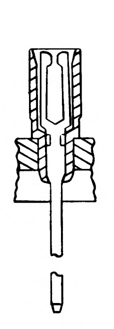
CODE IDENT NO. | SIZE E | NASA DRAWING NO. 1021212
SCALE FULL | WT | SHEET 2 OF 2

1021212

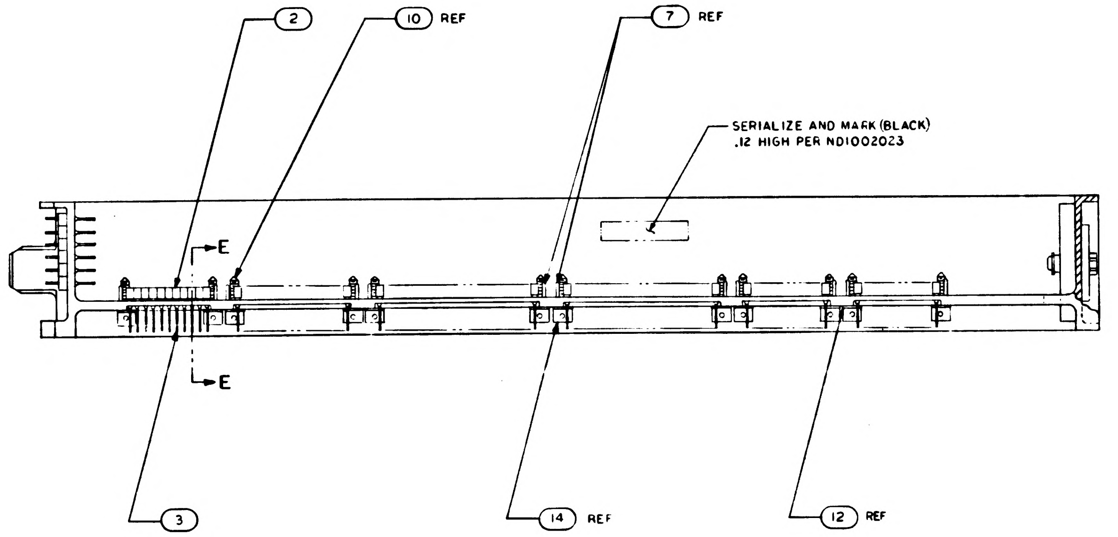
NOTICE – WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

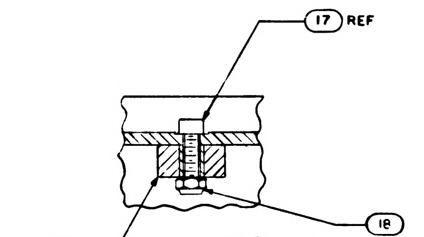
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	26 SEP 64	
B	REVISED PER TDRR 14321	20 NOV 64	
C	REVISED PER TDRR 16643	FEB 65	

REVISIONS TDRR 10937

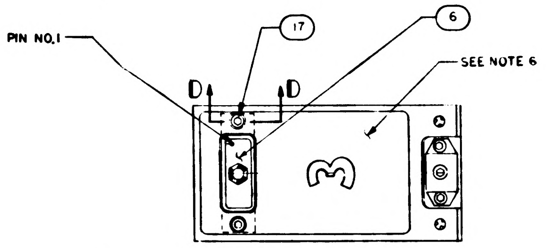


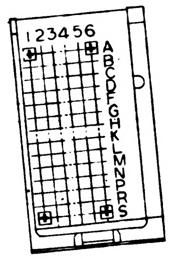
PARTIAL SECTION E-E
174 PLACES

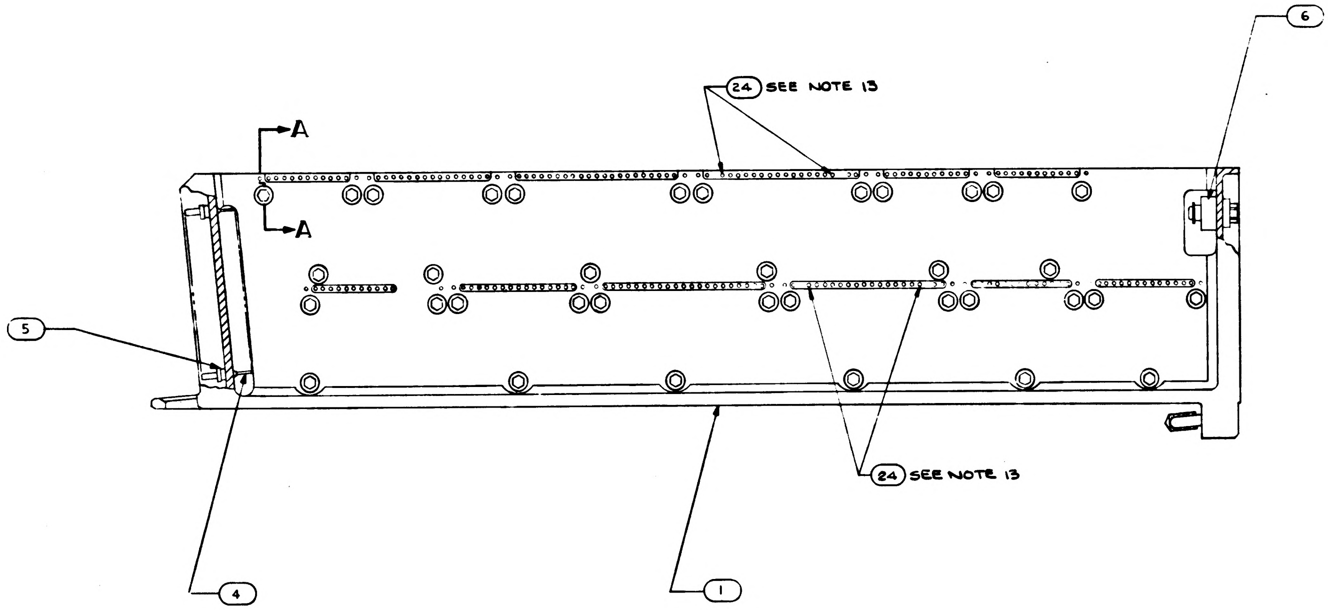


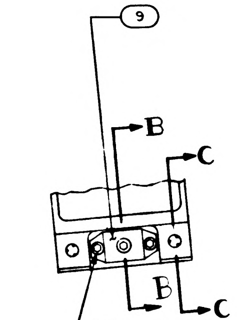


SECTION D-D
SCALE 2/1





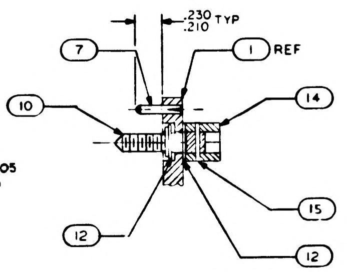




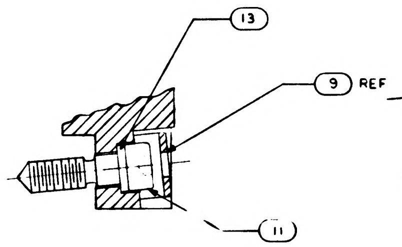
SEE NOTES 7&8

NOTES

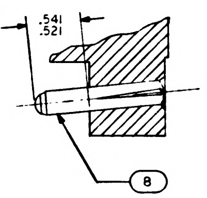
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327
2. ASSEMBLE ITEM NUMBERS 2 3 4 AND 5 PER ND1002136
3. MARK PER ND1002019
4. BOND ITEM NOS 19 & 20 TO ITEM NO1 PER ND1002004 AS NECESSARY
5. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO.16 DURING FINAL ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NO'S. 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL S 6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS 1007143
11. PRIOR TO INSTALLATION OF ITEM NO 20 COVER ITEM NO 22 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO 20 COVER UNINSULATED SURFACES OF ITEM NO 20 WITH ND 1002004 TYPE I
13. BOND ITEM 24 IN HOLES 45A3J4-3 AND -17 AND 45A3J10-3 AND-17 PER ND 1002004, TYPE I



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND B1B	45A3J14-7
B1E	45A3J14-8
B1F	45A3J14-9
B2B	45A3J14-2
B2E	45A3J14-3
B2F	45A3J14-10
B3B	45A3J14-11
B3E	45A3J14-12
B3F	45A3J14-4
B4B	45A3J14-1
B4E	45A3J14-5
B4F	45A3J14-6

			4		24	1008256	PIN, POLARIZING
			X		23	1008452	WIRING DIAGRAM
			AR		22	MIL-I-15126F	MYLAR TAPE TYPE MFT 2 .38 WIDE
			1		21	1021205-006	RECEPTACLE, DS TYPE
			1		20	1021233	WIRING HARNESS B
			1		19	1015735	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF LOCKING HEX
			2		17	MS 16995-11	SCREW CAP SOCKET HEAD
			3		16	MS 6995-10	SCREW, CAP SOCKET HEAD
			36		15	MS171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	010383-1	INSULATOR, WRAPOST MALE
			84		4	010382-1	CONTACT, BLADE EDGE CONN
			174		3	1006781-2	CONTACT, WRAPO-T, FEMALE
			174		2	1006774	INSULATOR WRAPO-T, FEMALE
			1		1	1008523	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021223-011	1021207-011	-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+
-	-.02	-

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Lahne DATE 1 June 64
CHECKED 5 Jun 64
APPROVAL 6/8/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

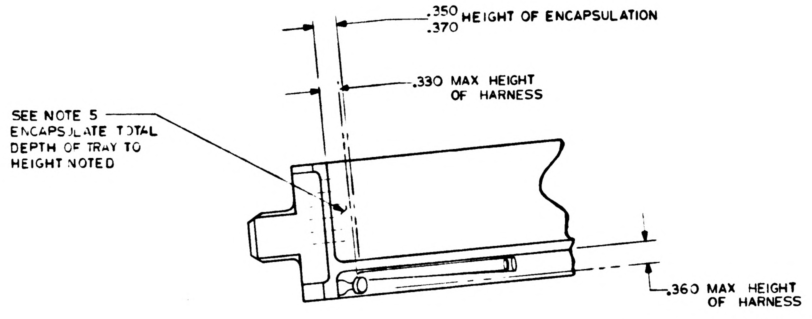
FRAME ASSEMBLY
TRAY 3

CODE IDENT NO
SIZE E
1021213
SCALE
SHEET

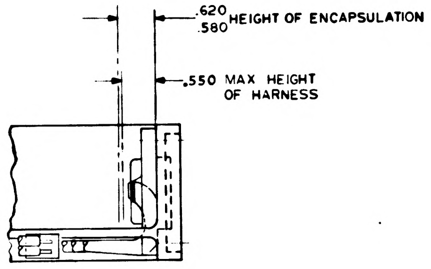
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 1907

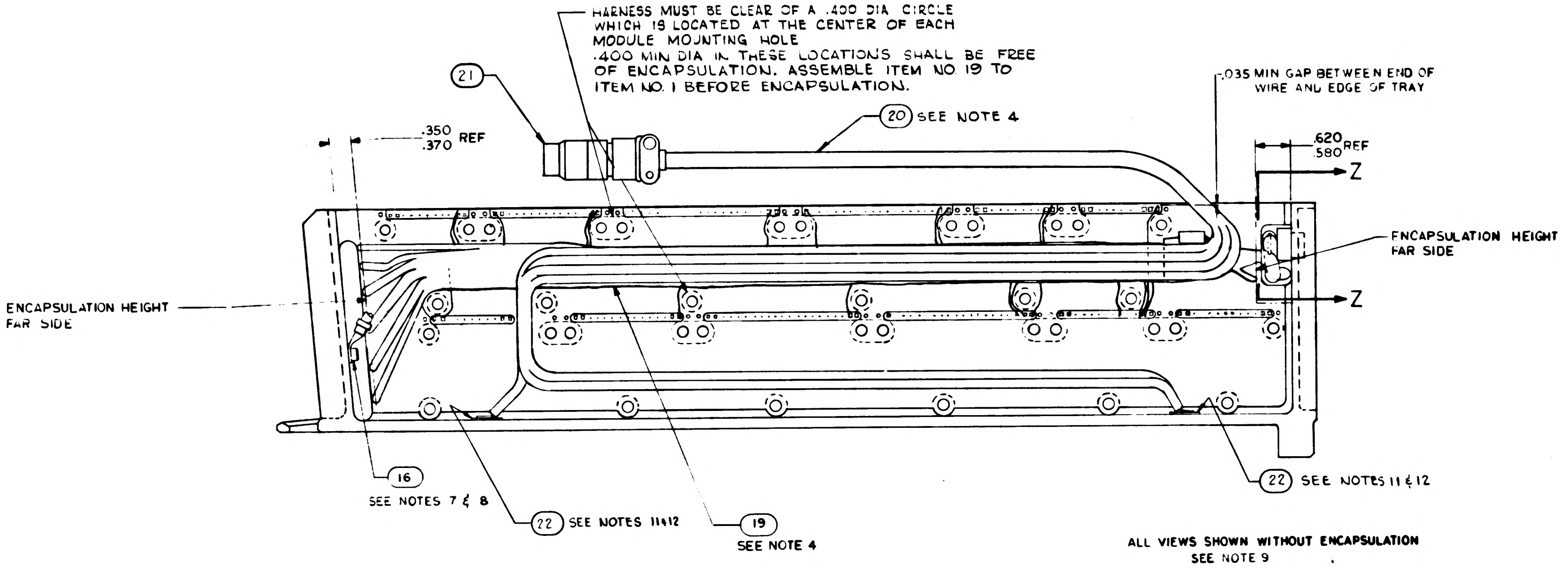
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	[illegible]	[illegible]
B	REVISED PER TDRR 14321	20 NOV 64	[illegible]
C	REVISED PER TDRR 16643	26 FEB 65	[illegible]



.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS

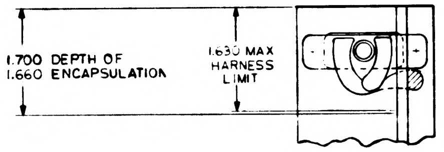


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS



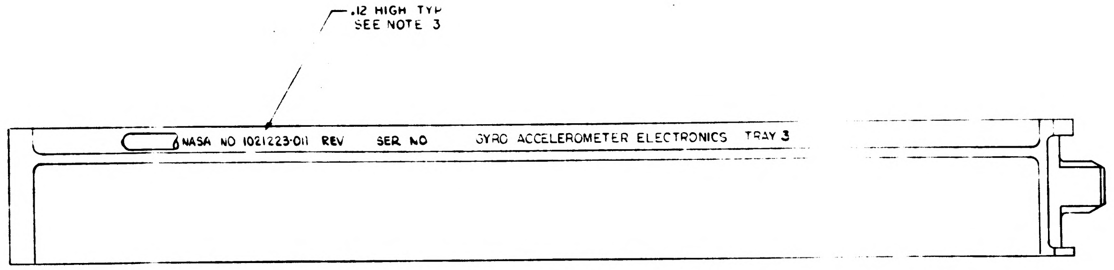
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 19 TO ITEM NO. 1 BEFORE ENCAPSULATION.
21
20 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
.620
.580 REF
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7 & 8
22 SEE NOTES 11 & 12
19
SEE NOTE 4
22 SEE NOTES 11 & 12

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9



1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z



.12 HIGH TYP SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021223-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO
CONTRACT NAS 9-[illegible]
DRAWN R. Lohbue DATE June 64
CHECKED [illegible] 5 Jun 64
APPROVAL [illegible] Jun 64
APPROVAL [illegible] Jun 64
D. H. Tent 9 Jun 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 14 Jun 64

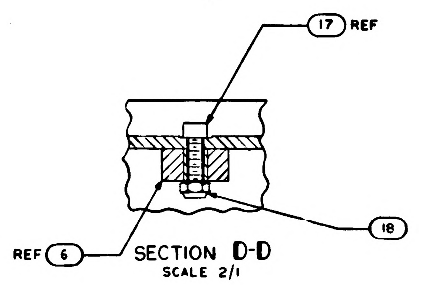
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 3

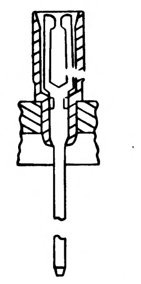
CODE IDENT NO
SIZE E
NASA DRAWING NO 1021213
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

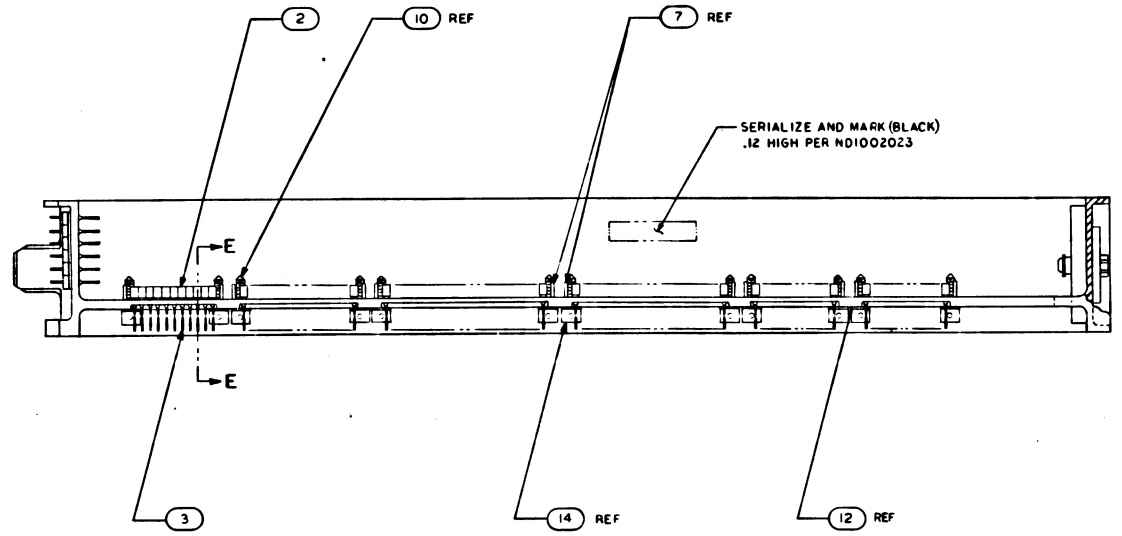
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	26 SEP 64	LGC
B	REVISED PER TDRR 14321	20 NOV 64	
C	REVISED PER TDRR 16643	26-FEB-65	
D	REVISED PER TDRR 16980	8 MAR 65	J J J

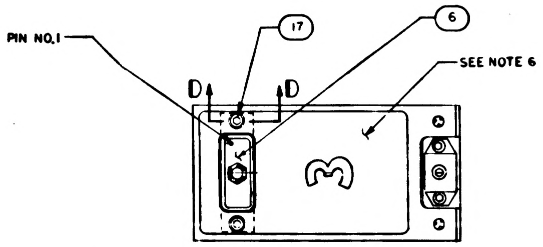


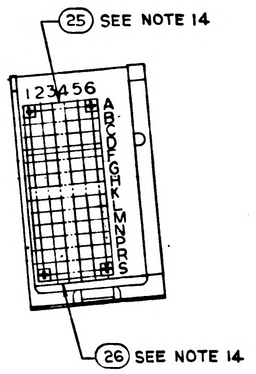
SECTION D-D
SCALE 2/1

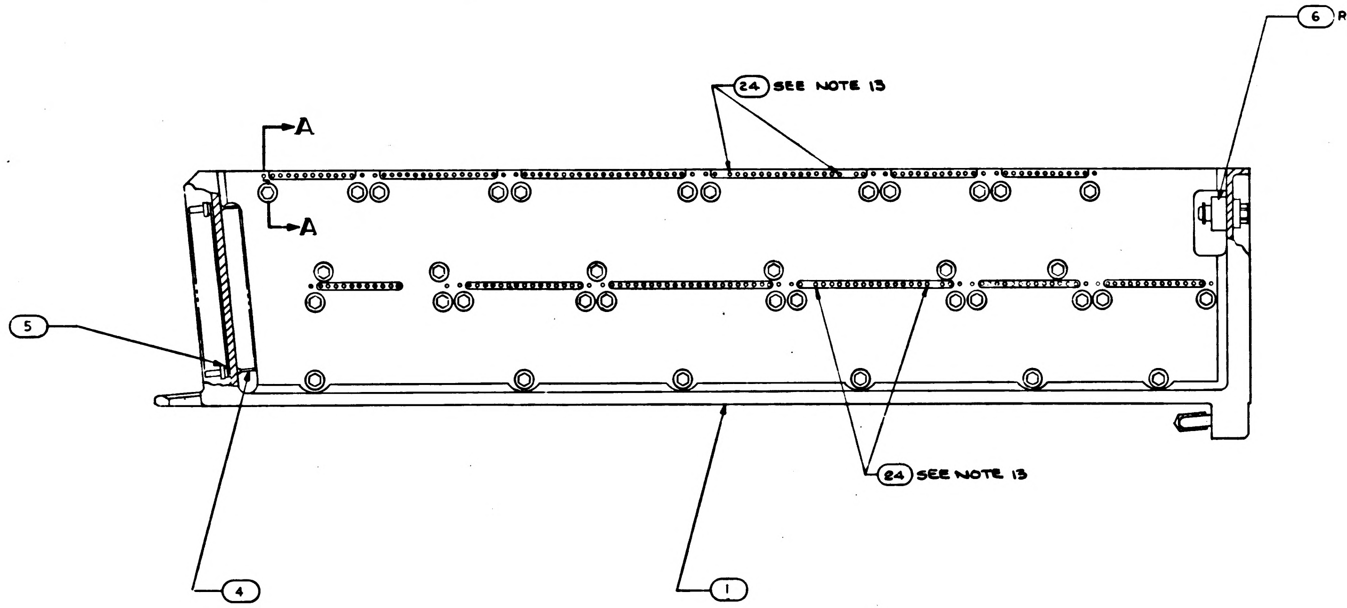


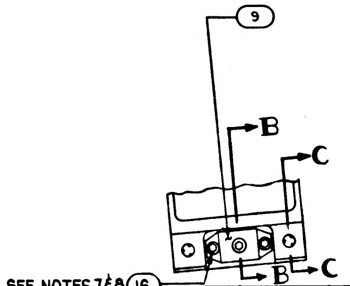
PARTIAL SECTION E-E
174 PLACES





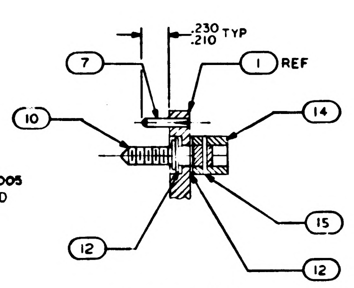




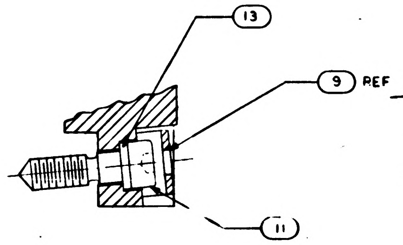


NOTES

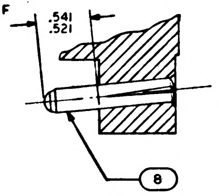
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327
2. ASSEMBLE ITEM NUMBERS 2 3 4 AND 5 PER ND1002136
3. MARK PER ND1002019
4. BOND ITEM NOS 19 & 20 TO ITEM NO1 PER ND1002004 AS NECESSARY
5. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO.16 DURING FINAL ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NO'S. 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS 1007143
11. PRIOR TO INSTALLATION OF ITEM NO 20 COVER ITEM NO 22 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO 20 COVER UNINSULATED SURFACES OF ITEM NO 20 WITH ND 1002004 TYPE I
13. BOND ITEM 24 IN HOLES 45A3J4-3 AND -17 AND 45A3J10-3 AND-17 PER ND 1002004, TYPE I
14. BOND ITEM NUMBERS 25 AND 26 TO ITEM 5 PER ND 1002237.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND B1B	45A3J14-7
B1E	45A3J14-8
B1F	45A3J14-9
B2B	45A3J14-2
B2E	45A3J14-3
B2F	45A3J14-10
B3B	45A3J14-11
B3E	45A3J14-12
B3F	45A3J14-4
B4B	45A3J14-1
B4E	45A3J14-5
B4F	45A3J14-6

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		26	1008552	GASKET
			1		25	1008551	GASKET
			4		24	1008256	PIN, POLARIZING
			X		23	1008452	WIRING DIAGRAM
			AR		22	MIL-I-15126F	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		21	1021205-006	RECEPTACLE, DS TYPE
			1		20	1021233	WIRING HARNESS B
			1		19	1015735	WIRING HARNESS A
			2		18	MS 21045 C04	NUT, SELF LOCKING HEX
			2		17	MS 16995-11	SCREW, CAP SOCKET HEAD
			3		16	MS 16995-10	SCREW, CAP SOCKET HEAD
			36		15	MS 171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONN
			174		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			174		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008523	FRAME

LIST OF PARTS AND MATERIALS

1021223-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+
-	-.02	-

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. LaLone DATE 1 JUNE 64
CHECKED 5 JUN 64
APPROVAL 6/1/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

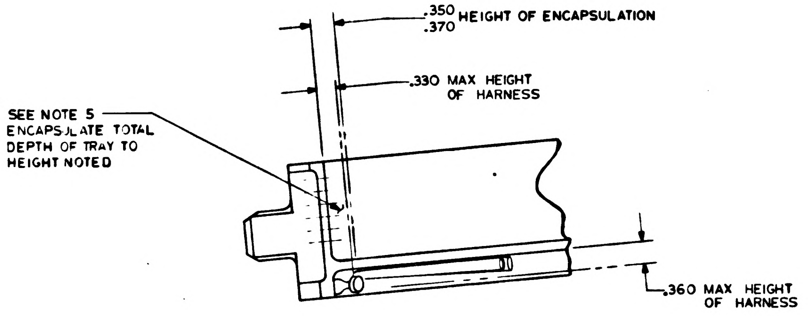
FRAME ASSEMBLY
TRAY 8

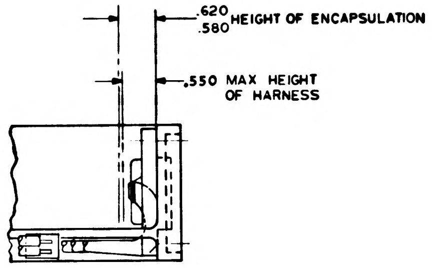
CODE IDENT NO.
SIZE E
1021213
SCALE 1:1
SHEET 1 OF 2

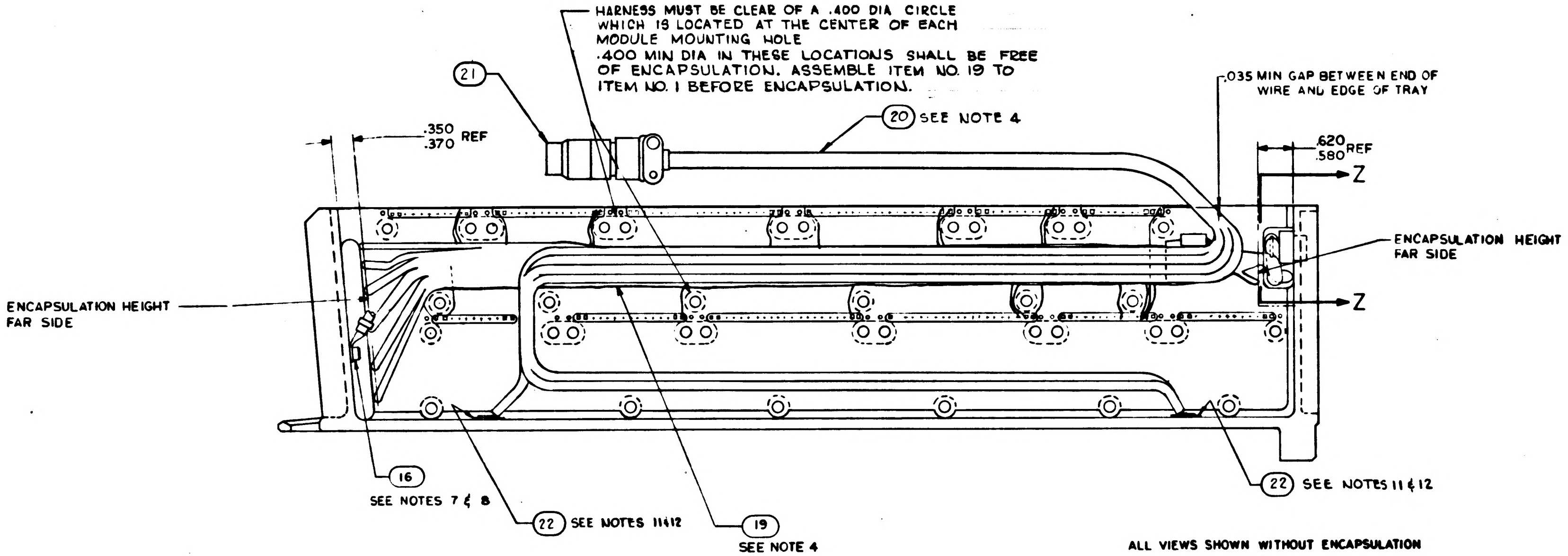
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10907

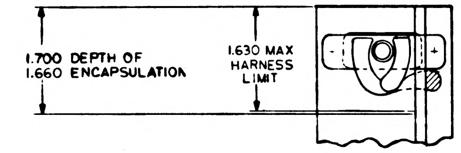
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	26 SEP 64	ETH
B	REVISED PER TDRR 14321	20 NOV 64	J.K.
C	REVISED PER TDRR 16643	16 FEB 65	
D	REVISED PER TDRR 16980	MAR 65	J J J


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS

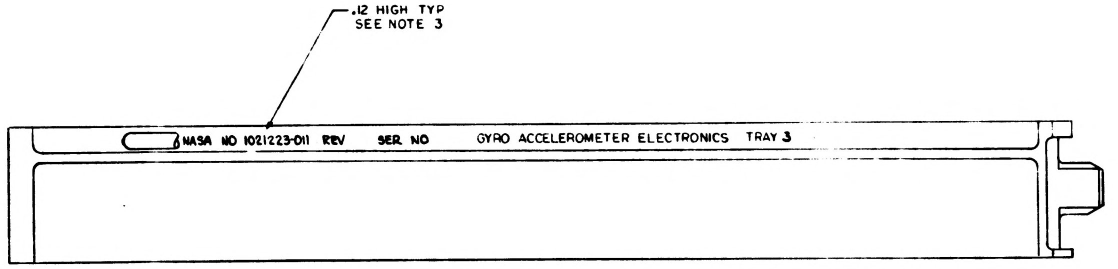

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 TO ITEM NO. 1 BEFORE ENCAPSULATION.
21
20 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
.620
.580 REF
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7 & 8
22 SEE NOTES 11&12
19
SEE NOTE 4
22 SEE NOTES 11&12

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

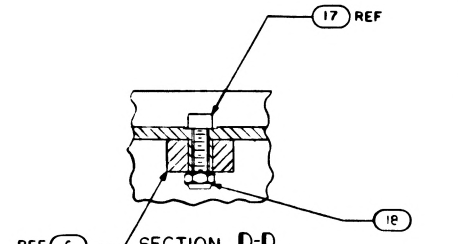
1021223-011	1021207-011	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS ± — ANGLES ± —	MIT INSTRUMENTATION LAB	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN R. LaDue DATE 2 June 64 CHECKED 5 Jun 64 APPROVAL 8 Jun 64 APPROVAL 9 Jun 64 D. R. Tent 9 Jul 64	FRAME ASSEMBLY TRAY 3
APPLICATION		MATERIAL HEAT TREATMENT FINAL FINISH	NASA APPROVAL MIT APPROVAL W Kupfer 14	CODE IDENT NO. SIZE E NASA DRAWING NO 1021213 SCALE 1/1 WT SHEET 2 OF 2

1021213 D

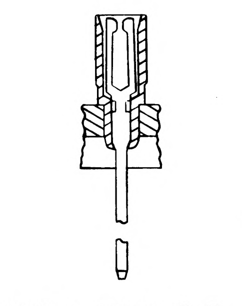
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

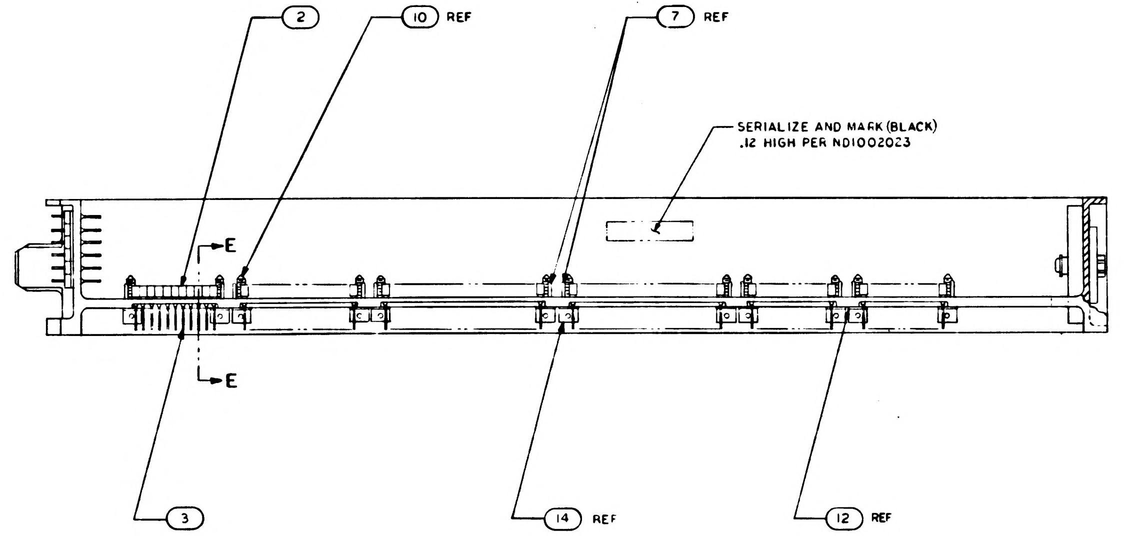
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	26 SEP 64	
B	REVISED PER TDRR 14321	23 NOV 64	
C	REVISED PER TDRR 16643	FEB -65	
D	REVISED PER TDRR 16980	5 MAR -65	
E	REVISED PER TDRR - 2011B	2 JUN 65	B

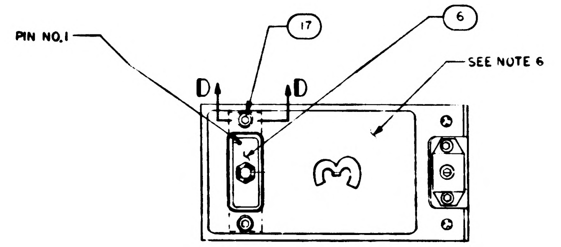


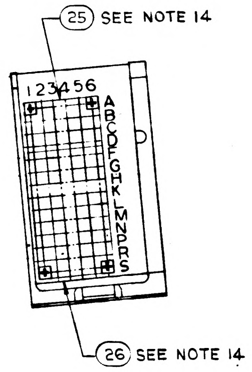
SECTION D-D
SCALE 2/1

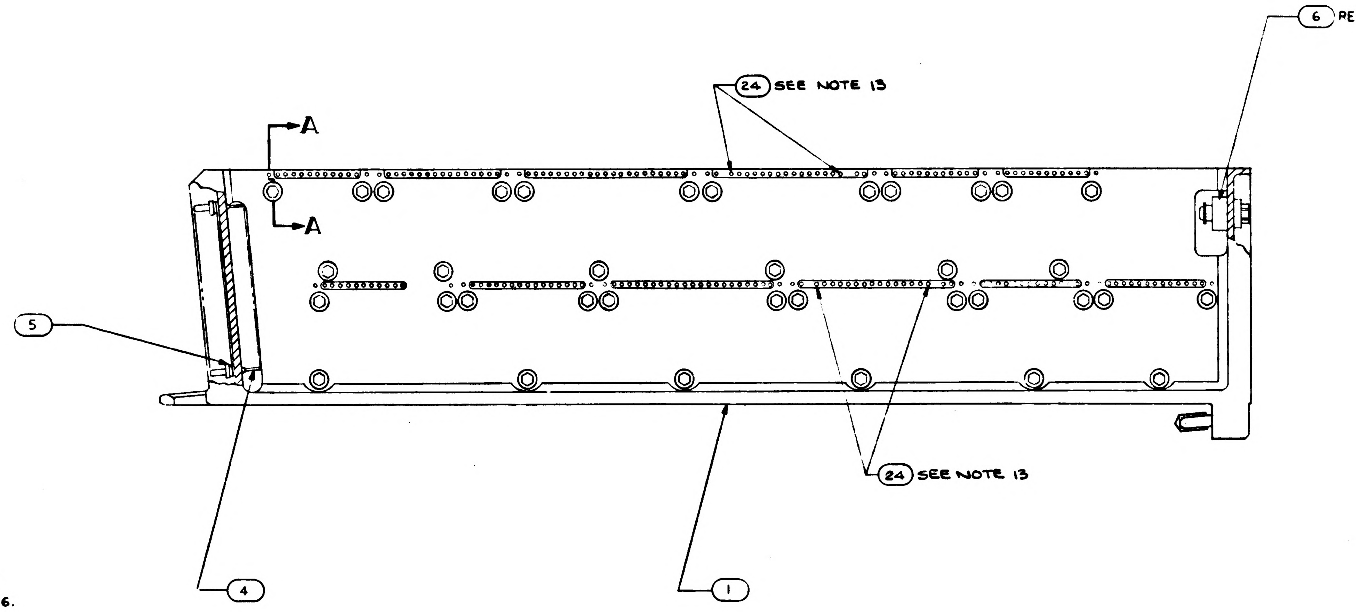


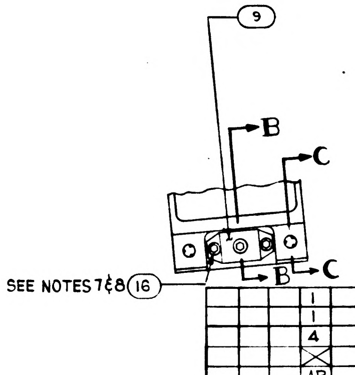
PARTIAL SECTION E-E
174 PLACES





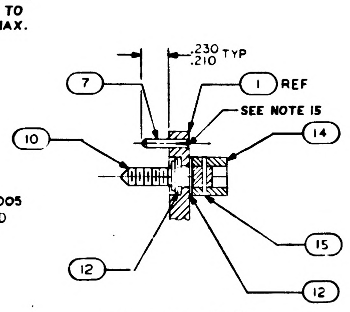




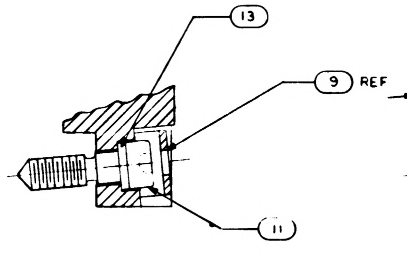


NOTES:

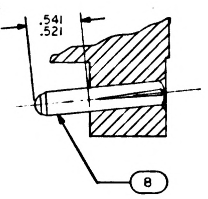
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327.
2. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136.
3. MARK PER ND1002019.
4. BOND ITEM NOS 19 & 20 TO ITEM NO 1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO. 16 DURING FINAL ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS. 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL S 6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS 1007143
11. PRIOR TO INSTALLATION OF ITEM NO 20 COVER ITEM NO 22 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO 20 COVER UNINSULATED SURFACES OF ITEM NO 20 WITH ND 1002004 TYPE I
13. BOND ITEM 24 IN HOLES 45A3J4-3 AND -17 AND 45A3J10-3 AND -17 PER ND 1002004, TYPE I
14. BOND ITEM NUMBERS 25 AND 26 TO ITEM 5 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES (CONTINUED):

16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

TERMINATION CHART

FROM	TO
COND B1B	45A3J14-7
B1E	45A3J14-8
B1F	45A3J14-9
B2B	45A3J14-2
B2E	45A3J14-3
B2F	45A3J14-10
B3B	45A3J14-11
B3E	45A3J14-12
B3F.	45A3J14-4
B4B	45A3J14-1
B4E	45A3J14-5
B4F	45A3J14-6

LIST OF PARTS AND MATERIALS

QUANTITY REQUIRED			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		26	1008552	GASKET
			1		25	1008551	GASKET
			4		24	1008256	PIN, POLARIZING
			X		23	1008452	WIRING DIAGRAM
			AR		22	MIL-I-15126F	MYLAR TAPE TYPE MFT 25, .38 WIDE
			1		21	1021205-006	RECEPTACLE, DS TYPE
			1		20	1021233	WIRING HARNESS B
			1		19	1015735	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF LOCKING HEX
			2		17	MS 16995-11	SCREW CAP SOCKET HEAD
			3		16	MS 16995-10	SCREW, CAP SOCKET HEAD
			36		15	MS171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER THRUST
			1		11	1008098	SCREW, SOCKET HEAD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST [illegible]
			84		4	1010382-1	CONTACT, BLADE EDGE [illegible]
			174		3	1006781-2	CONTACT, WRAPOST FEMALE MIN
			174		2	1006774	INSULATOR WRAPOST, FEMALE MIN
			1		1	1008523	FRAME

1021223-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS +.02 −.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Lahm 1 JUNE 64
CHECKED 5 JUN 64
APPROVAL 6/8/64
APPROVAL 8 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

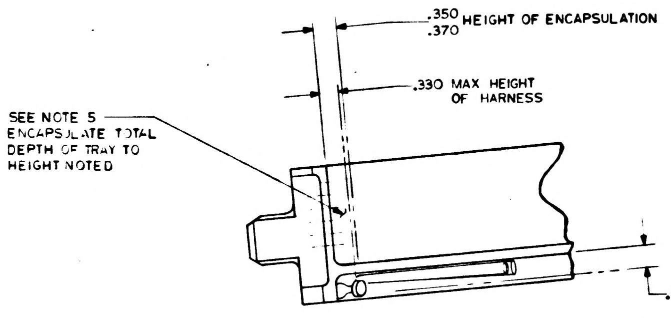
FRAME ASSEMBLY
TRAY 3

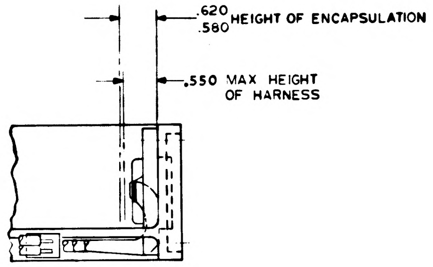
CODE IDENT NO 80230
SIZE E
1021213
SCALE 1/1
SHEET 1 OF 2

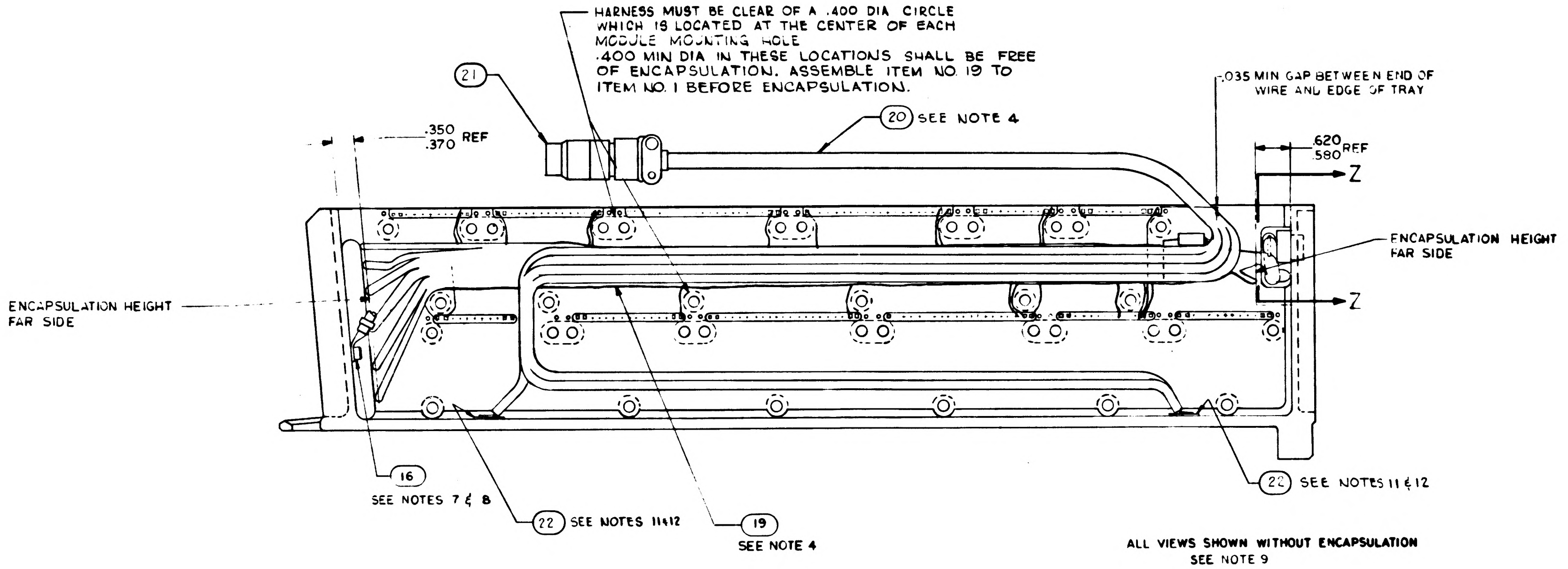
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

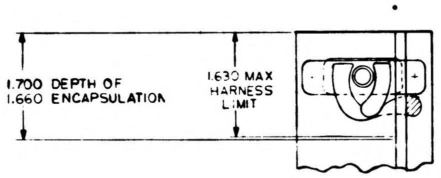
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	SEP 64	LGC
B	REVISED PER TDRR 14321	20 NOV 64	J.K.
C	REVISED PER TDRR 16643	16 FEB 65	
D	REVISED PER TDRR 16980	MAR 65	
E	REVISION STATUS CHANGED		J.B.


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS

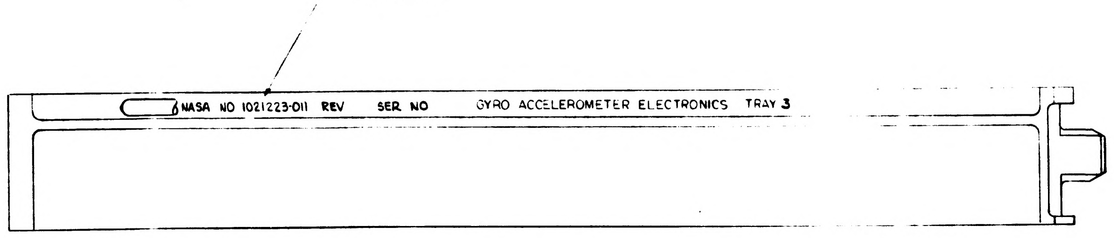

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 19 TO ITEM NO. 1 BEFORE ENCAPSULATION.
21
20 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
.620
.580 REF
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7 & 8
22 SEE NOTES 11 & 12
19
SEE NOTE 4
22 SEE NOTES 11 & 12

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021223-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
CONTRACT NAS 9-497
DRAWN R. LaLime DATE 2 June 64
CHECKED 5 Jun 64
APPROVAL 5 Jun 64
APPROVAL 9 Jun 64
D. H. Test 9 Jun 64
NASA APPROVAL
MIT APPROVAL W. Kupfer 14 Jul 64

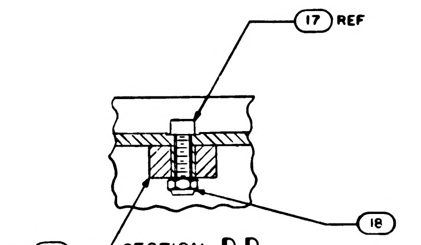
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 3

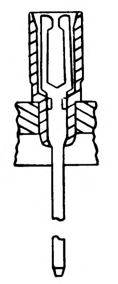
CODE IDENT NO 80230
SIZE E
NASA DRAWING NO 1021213
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

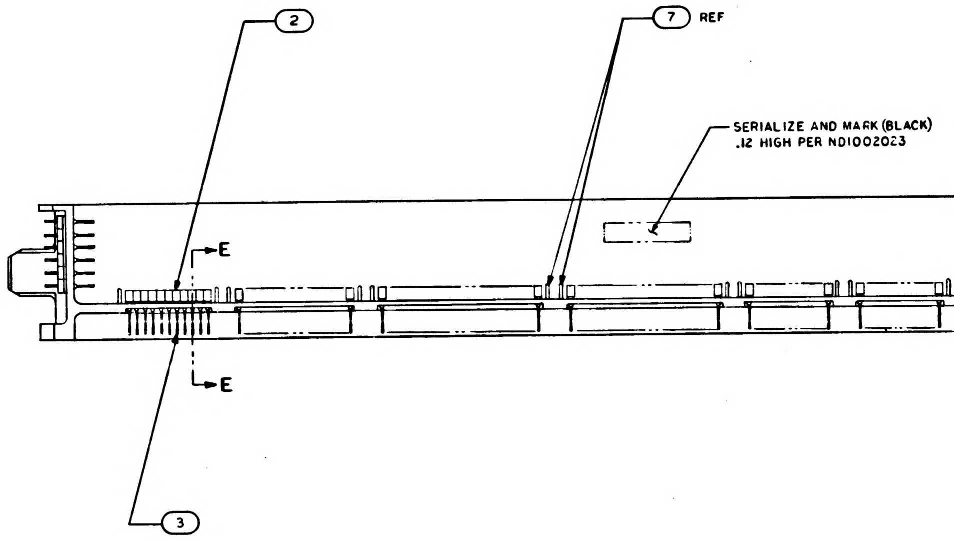
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12[illegible]	26 SEP 64	
B	REVISED PER TDRR 14321	20 NOV 64	
C	REVISED PER TDRR 16643	26 FEB 65	
D	REVISED PER TDRR 16980	5 MAR 65	
E	REVISED PER TDRR - 20118	2 [illegible] 65	
F	REVISED PER TDRR 20787	2 [illegible] 65	

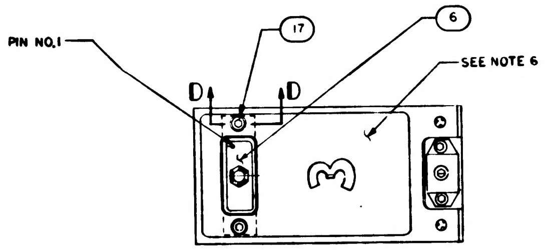


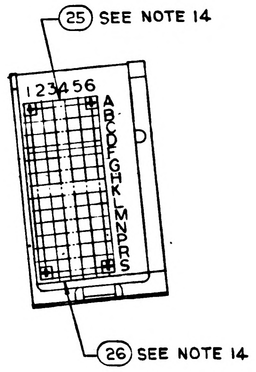
SECTION D-D
SCALE 2/1

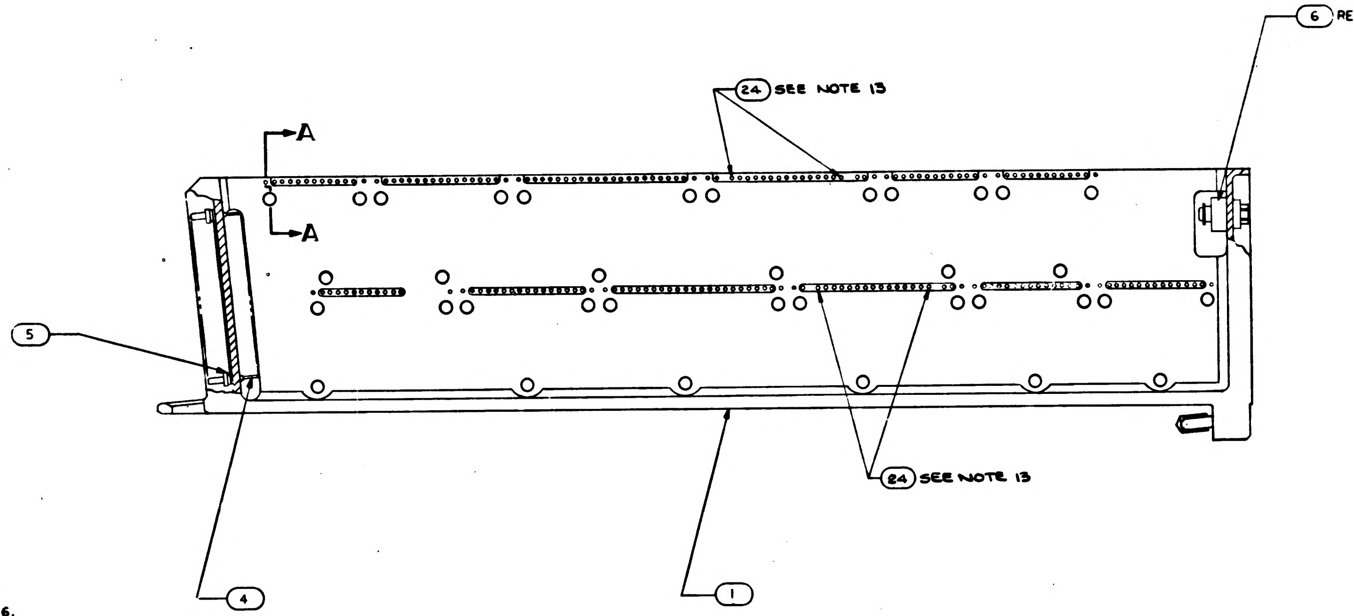


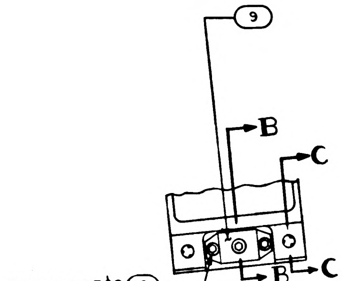
PARTIAL SECTION E-E
174 PLACES

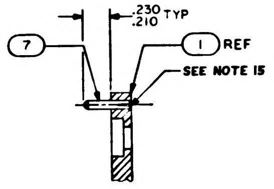




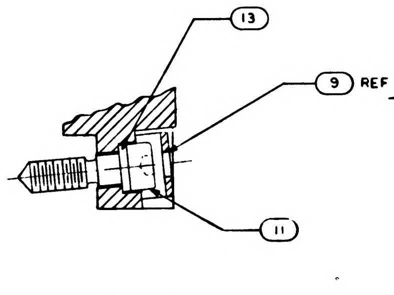




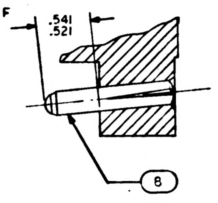




SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327.
2. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND1002136.
3. MARK PER ND1002019.
4. BOND ITEM NOS 19 & 20 TO ITEM NO 1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO. 16 DURING FINAL ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NO'S. 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS 1007143
11. PRIOR TO INSTALLATION OF ITEM NO 20 COVER ITEM NO 22 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO 20 COVER UNINSULATED SURFACES OF ITEM NO 20 WITH ND 1002004 TYPE I
13. BOND ITEM 24 IN HOLES 45A3J4-3 AND -17 AND 45A3J10-3 AND -17 PER ND 1002004, TYPE I
14. BOND ITEM NUMBERS 25 AND 26 TO ITEM 5 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.

NOTES (CONTINUED):

16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

TERMINATION CHART	
FROM	TO
COND B1B	45A3J14-7
B1E	45A3J14-8
B1F	45A3J14-9
B2B	45A3J14-2
B2E	45A3J14-3
B2F	45A3J14-10
B3B	45A3J14-11
B3E	45A3J14-12
B3F	45A3J14-4
B4B	45A3J14-1
B4E	45A3J14-5
B4F	45A3J14-6

QUANTITY REQUIRED							
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		26	1008552	GASKET
			1		25	1008551	GASKET
			4		24	1008256	PIN, POLARIZING
			X		23	1008452	WIRING DIAGRAM
			AR		22	MIL-I-15126F	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		21	1021205-006	RECEPTACLE, DS TYPE
			1		20	1021233	WIRING HARNESS B
			1		19	1015735	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF LOCKING HEX
			2		17	MS 16995-11	SCREW, CAP SOCKET HEAD
			3		16	MS 16995-10	SCREW, CAP SOCKET HEAD
			~~36~~		~~15~~	~~MS171433~~	~~PIN, SPRING~~
			~~36~~		~~14~~	~~1004207~~	~~DRIVE CYLINDER~~
			1		13	1008099-2	WASHER
			~~72~~		~~12~~	~~1004206~~	~~WASHER, THRUST~~
			1		11	1008098	SCREW, SOCKET HEAD
			~~36~~		~~10~~	~~1008095~~	~~SCREW, JACK~~
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONN
			174		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			174		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008523	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021223-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. Lakin DATE 1 JUNE 64
CHECKED 5 JUN 64
APPROVAL 6/1/64
APPROVAL 8 JUNE 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

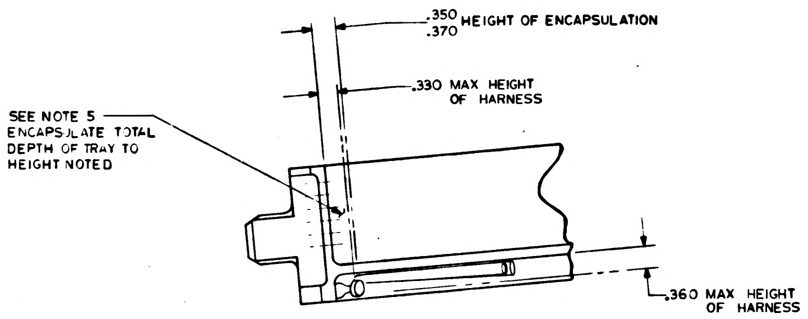
FRAME ASSEMBLY
TRAY 3

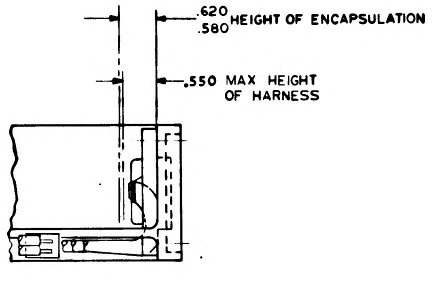
CODE IDENT NO 80230
SIZE E
1021213
SCALE 1/1
SHEET 1 OF 2

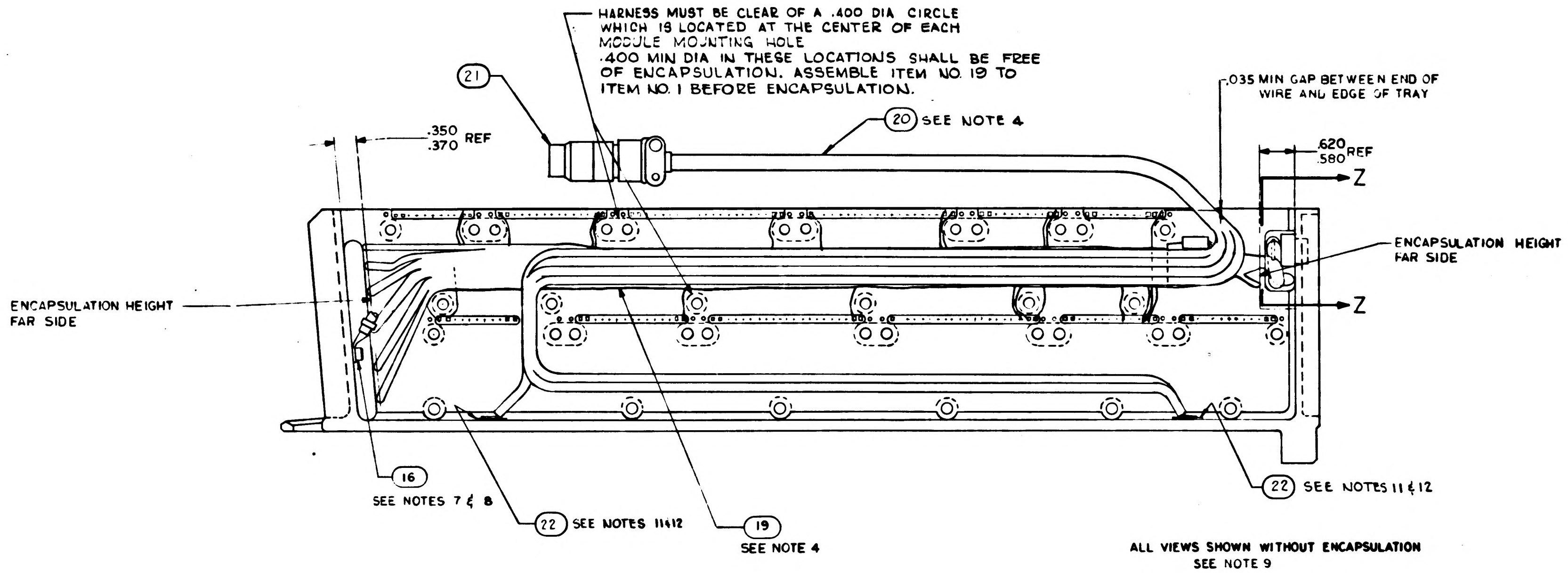
NOTICE WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

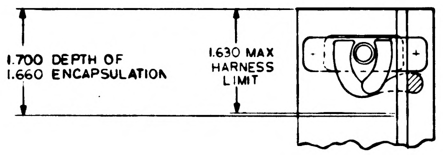
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12223	SEP 64	
B	REVISED PER TDRR 14321	20 NOV 64	J.K.
C	REVISED PER TDRR 16643	6 FEB 65	
D	REVISED PER TDRR 16980	8 MAR 65	
E	REVISION STATUS CHANGED		
F	REVISION STATUS CHANGED		


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS

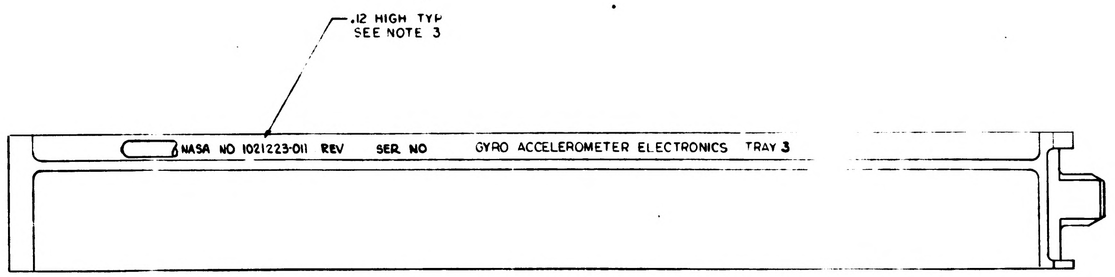

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 TO ITEM NO. 1 BEFORE ENCAPSULATION.
21
20 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
.620
.580 REF
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
Z
16
SEE NOTES 7 & 8
22 SEE NOTES 11&12
19
SEE NOTE 4
22 SEE NOTES 11 & 12

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021223-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CONTRACT NAS 9-4065
DRAWN R. LaLime DATE 2 JUNE 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 9 JUN 64
D. R. 9 JUL 64
NASA APPROVAL
MIT APPROVAL 14 JUL 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 3

CODE IDENT NO 80230
SIZE E
NASA DRAWING NO 1021213
SCALE 1/1
WT
SHEET 2 OF 2

1021213

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 1190

SYM	DESCRIPTION	DATE	APPROVAL
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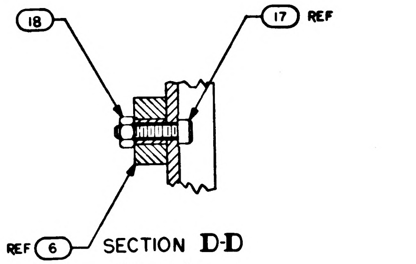
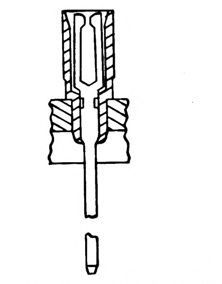
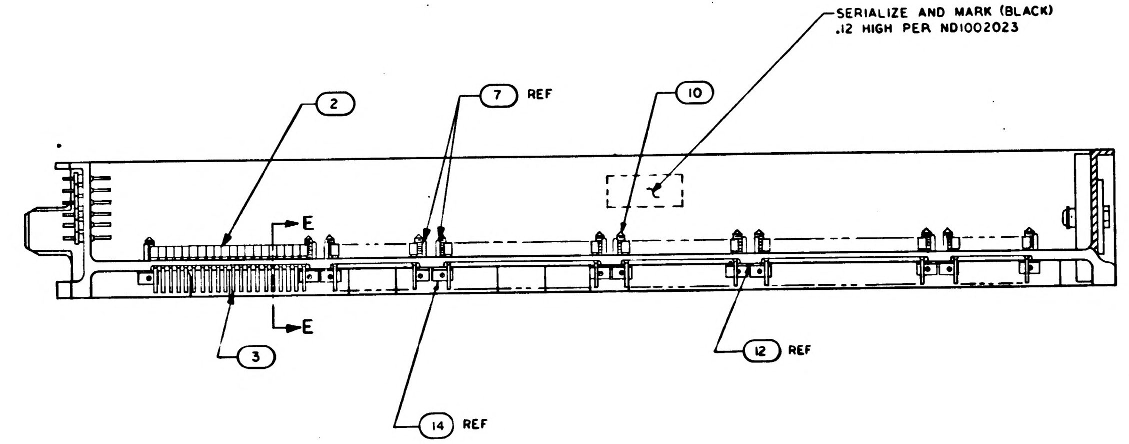
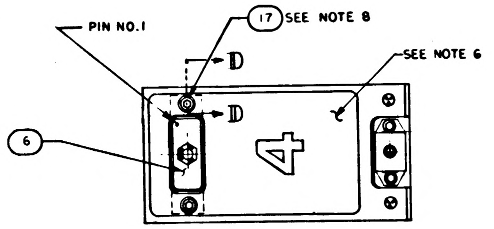


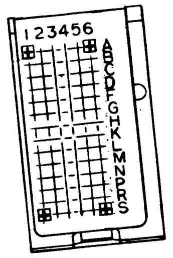
SECTION D-D
SCALE 2/1

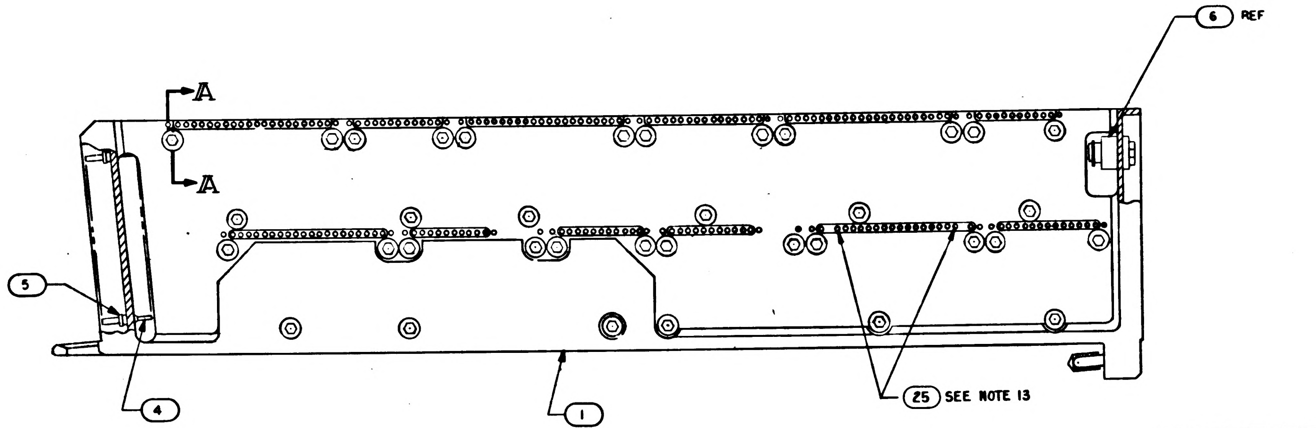


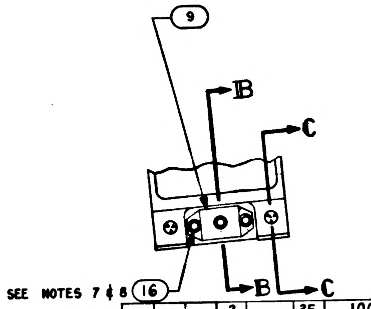
PARTIAL SECTION E-E
180 PLACES





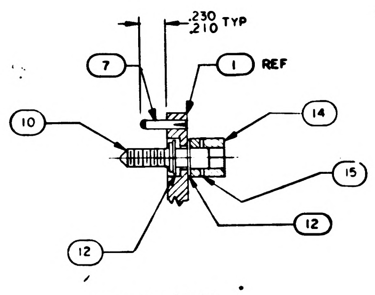




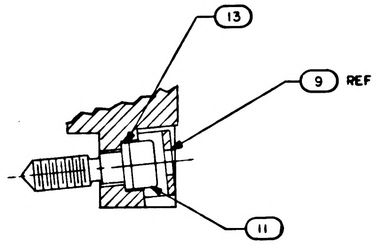


			2		25	1008256	PIN, POLARIZING
			1		24	1021205-006	RECEPTACLE, DS TYPE
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021234	WIRING HARNESS B
			X		21	1010094	WIRING DIAGRAM
			1		20	1015742	WIRE LIST A-A
			1		19	1015736	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS-16995-11	SCREW, CAP, SOCKET HD
			3		16	MS-16995-10	SCREW, CAP, SOCKET HD
			36		15	MS-171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER THRUST
			1		11	1008098	SCREW, SOCKET HD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR WRAPOST MALE
			84		4	1010382-1	CONTACT BLADE EDGE CONNECTOR
			180		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			180		2	1006774	INSULATOR
			1		1	1008104	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

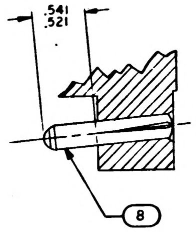
TERMINATION CHART	
FROM	TO
B1B	45A1J14- 7
B1E	-8
B1F	-9
B2B	-11
B2E	-12
B2F	-4
B3B	-2
B3E	-3
B3F	-10
34B	-1
34E	-5
B4F	45A1J14- 6



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. ASSEMBLE ITEM NUMBERS 2,3,4, AND 5 PER ND 1002136
4. BOND ITEM 22,19 AND 20 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007,144.
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
13. BOND ITEM 25 IN HOLES 45A4J9-3 & -17 PER ND 1002004, TYPE I.

1021224-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
− —	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN P. Tamsen DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 9 JUNE
NASA APPROVAL
MIT APPROVAL 14

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO.
SIZE E
1021214
SCALE 1:1
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 12923

SYM	DESCRIPTION	DATE	APPROVAL
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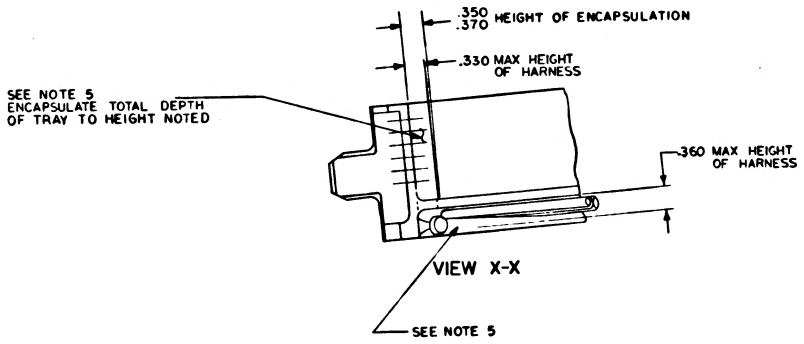
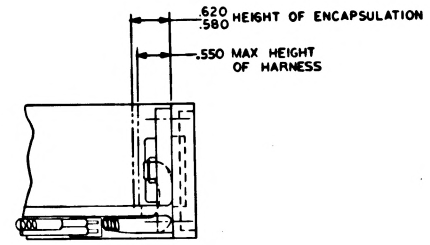
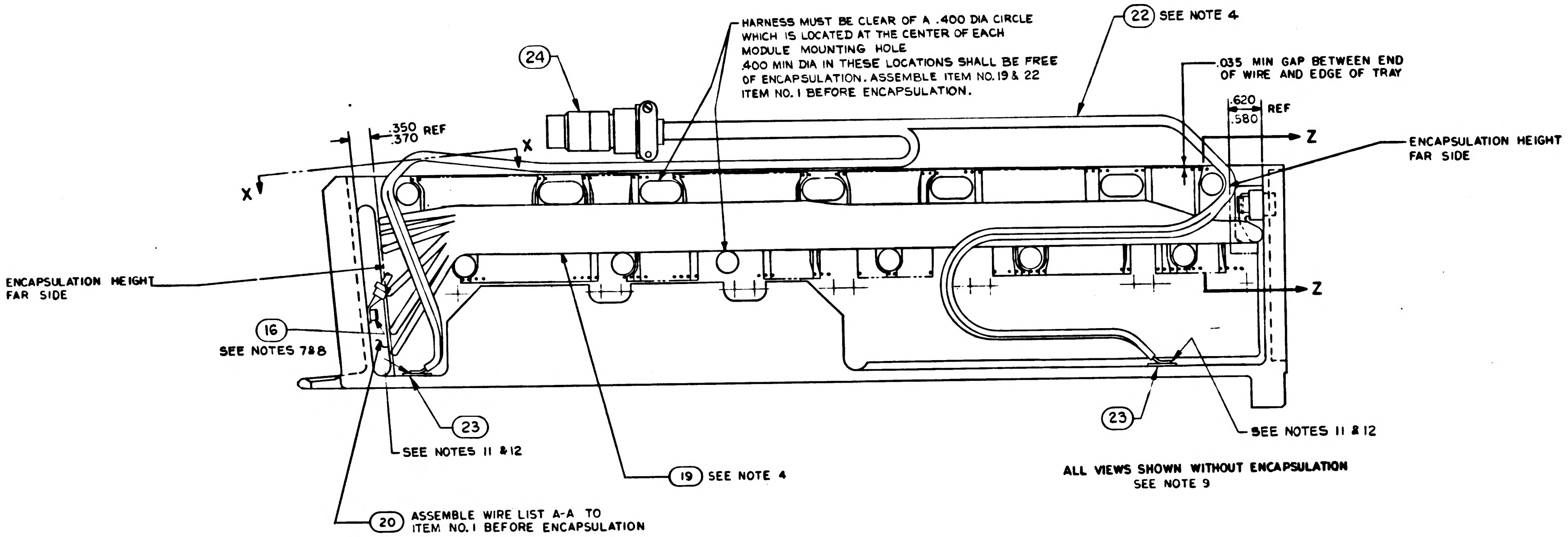


.350 .370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 5

VIEW X-X

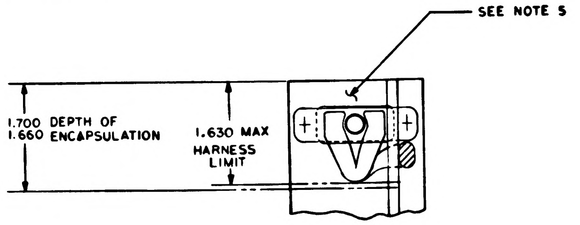


.620 .580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS



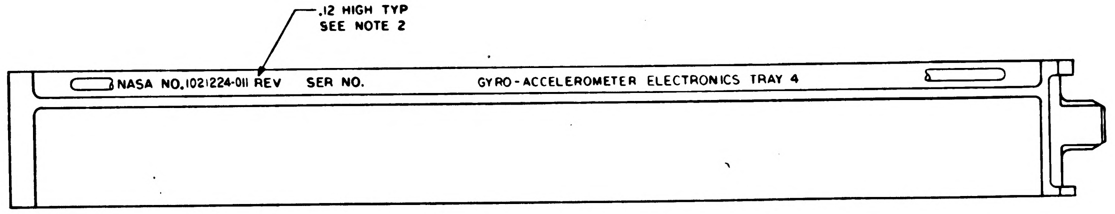
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 & 22 ITEM NO. 1 BEFORE ENCAPSULATION.
24
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620 .580 REF
Z
ENCAPSULATION HEIGHT FAR SIDE
.350 .370 REF
X
X
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7 & 8
Z
23
SEE NOTES 11 & 12
23
SEE NOTES 11 & 12
19 SEE NOTE 4
20 ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9



SEE NOTE 5
1.700 1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z



.12 HIGH TYP SEE NOTE 2
NASA NO. 1021224-011 REV SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021224-011	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-497
DRAWN R Tamiso DATE 64
CHECKED 5 JUN 64
APPROVAL Risberg 5/5/64
APPROVAL Ronsdale 8 JUN 64
B. R. Test 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 Jul 64

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HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO. | SIZE E | NASA DRAWING NO. 1021214
SCALE 1/1 | WT | SHEET 2 OF 2

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SYM	DESCRIPTION	DATE	APPROVAL
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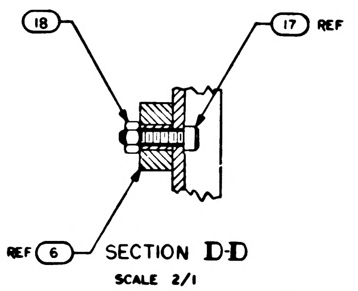
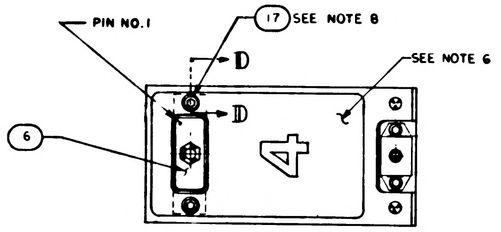
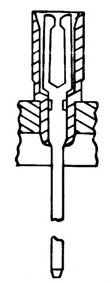
B	REVISED PER TDRR 14321	23 NOV 64	

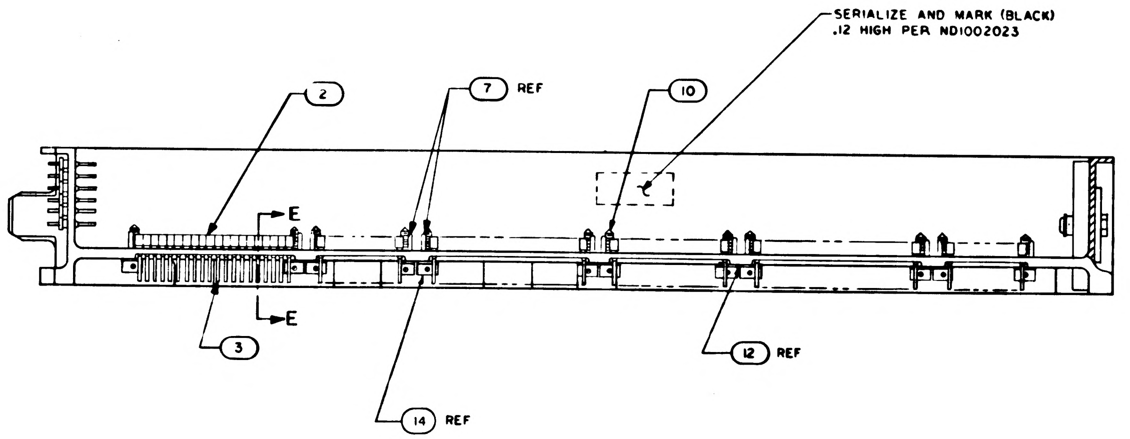


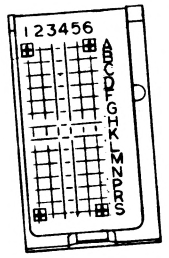
SECTION D-D
SCALE 2/1

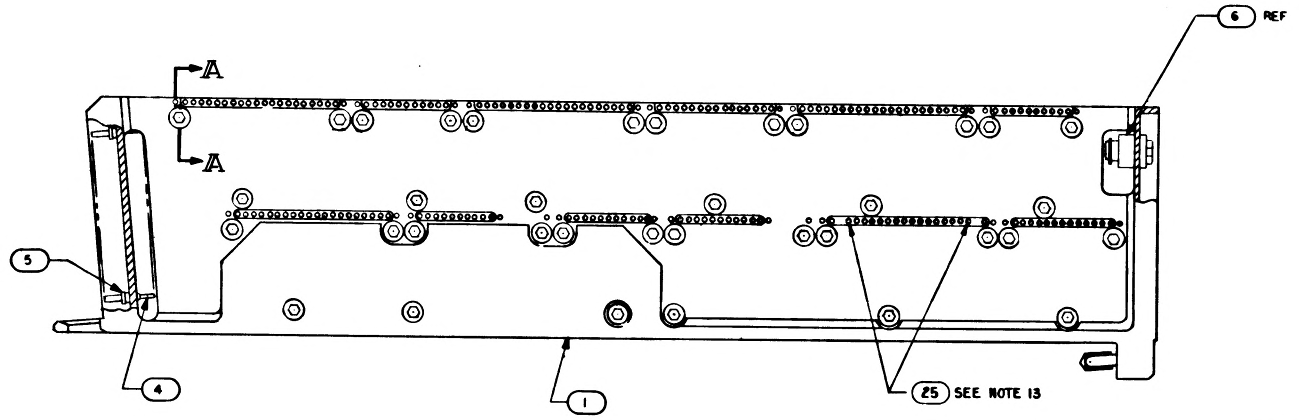


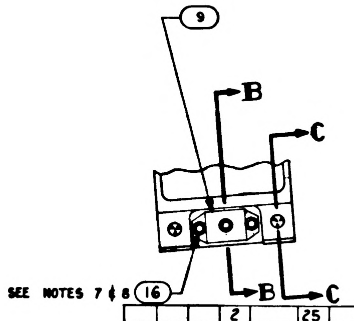


PARTIAL SECTION E-E
180 PLACES

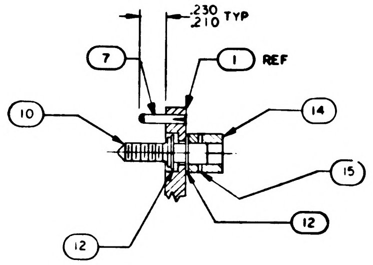




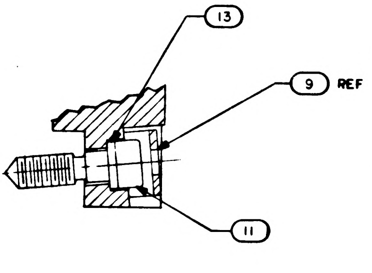




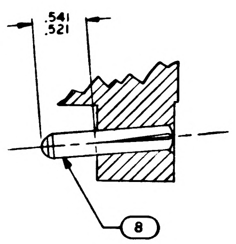
TERMINATION CHART	
FROM	TO
B1B	45A1J14- 7
B1E	-8
B1F	-9
B2B	-11
B2E	-12
B2F	-4
B3B	-2
B3E	-3
B3F	-10
B4B	-1
B4E	-5
B4F	45A1J14- 6



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. ASSEMBLE ITEM NUMBERS 2,3,4, AND 5 PER ND 1002136
4. BOND ITEM 22,19 AND 20 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007,144.
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
13. BOND ITEM 25 IN HOLES 45A4J9-3 & -17 PER ND 1002004, TYPE I.

QUANTITY REQUIRED								
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	
			2		25	1008256	PIN, POLARIZING	
			1		24	1021205-006	RECEPTACLE, DS TYPE	
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.	.38 WIDE
			1		22	1021234	WIRING HARNESS B	
			X		21	1008453	WIRING DIAGRAM	
			1		20	1015742	WIRE LIST A-A	
			1		19	1015736	WIRING HARNESS A	
			2		18	MS21045C04	NUT, SELF-LOCKING HEX	
			2		17	MS-16995-11	SCREW, CAP, SOCKET HD	
			3		16	MS-16995-10	SCREW, CAP, SOCKET HD	
			36		15	MS-171433	PIN SPRING	
			36		14	1004207	DRIVE CYLINDER	
			1		13	1008099-2	WASHER	
			72		12	1004206	WASHER THRUST	
			1		11	1008098	SCREW, SOCKET HD	
			36		10	1008095	SCREW, JACK	
			1		9	1001317	RETAINER, JACK SCREW	
			2		8	1010620-2	PIN, GUIDE	
			24		7	1010620-1	PIN, GUIDE	
			1		6	1010622-1	CONNECTOR, RECEPTACLE	
			84		5	1010383-1	INSULATOR, WRAPOST, MALE	
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR	
			180		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN	
			180		2	1006774	INSULATOR	
			1		1	1008104	FRAME	

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021224-011	1021207-011	-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
− —	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tamsen DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUNE 64
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO.
SIZE E
1021214
SCALE 1:1
SHEET 1 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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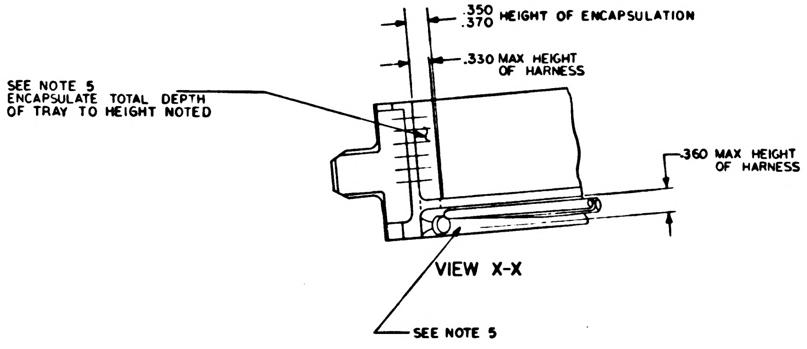
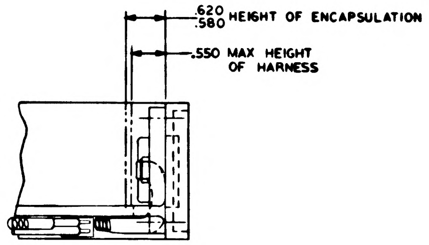
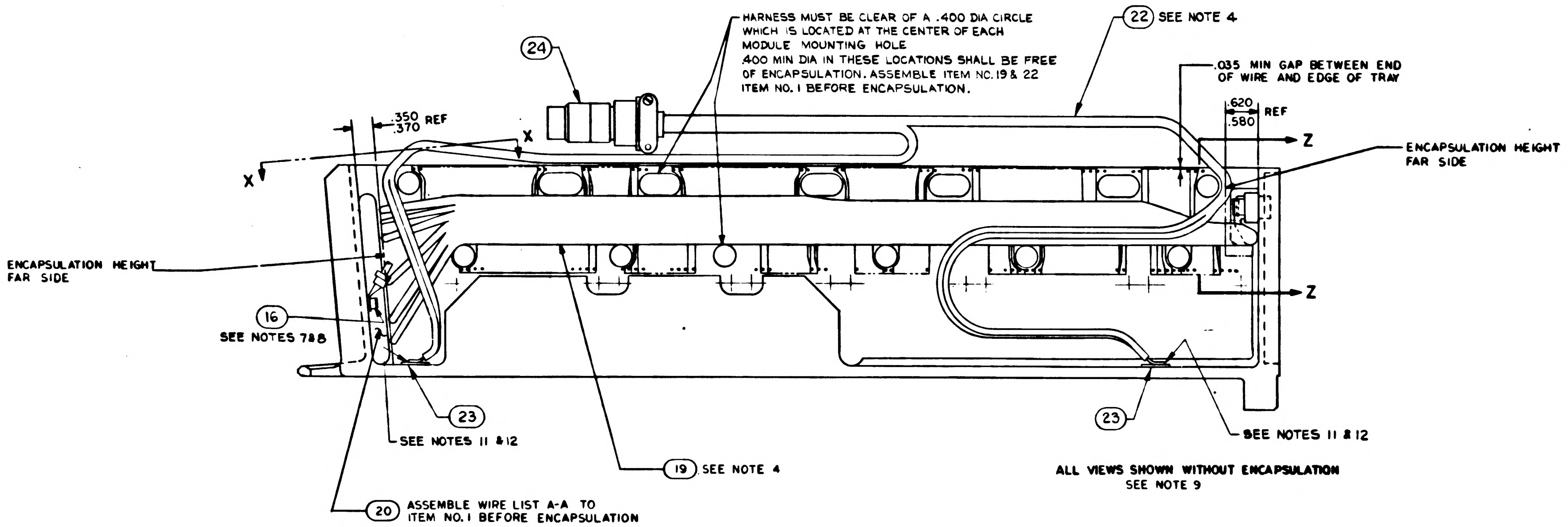
B	REVISED PER TDRR 14321	13 NOV 64	J.K.

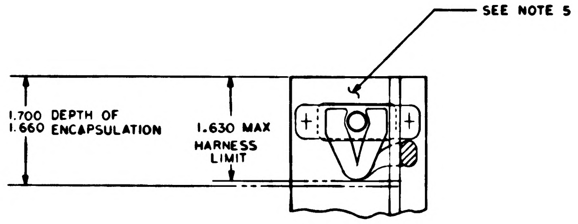

.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 5

VIEW X-X

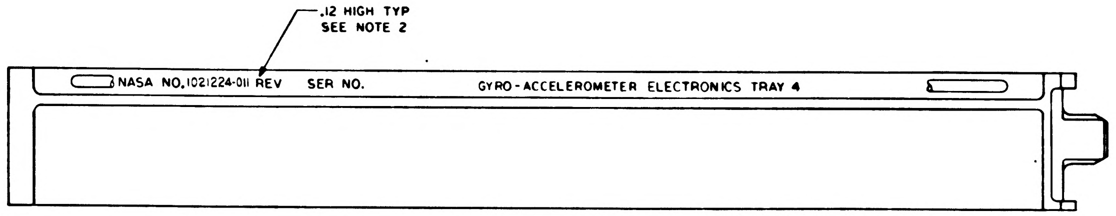

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 & 22 ITEM NO. 1 BEFORE ENCAPSULATION.
(22) SEE NOTE 4
(24)
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
.350
.370 REF
X
X
ENCAPSULATION HEIGHT FAR SIDE
(16)
SEE NOTES 7 & 8
(23)
SEE NOTES 11 & 12
(23)
SEE NOTES 11 & 12
(19) SEE NOTE 4
(20) ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021224-011 REV
SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021224-011	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-4065
DRAWN R. Tamer DATE 1 JUN 64
CHECKED [illegible] 5 JUN 64
APPROVAL Kinberg 5/5/64
APPROVAL [illegible] 8 JUN 64
[illegible] 8 JUN 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 14 Jul 64

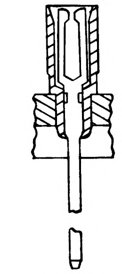
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

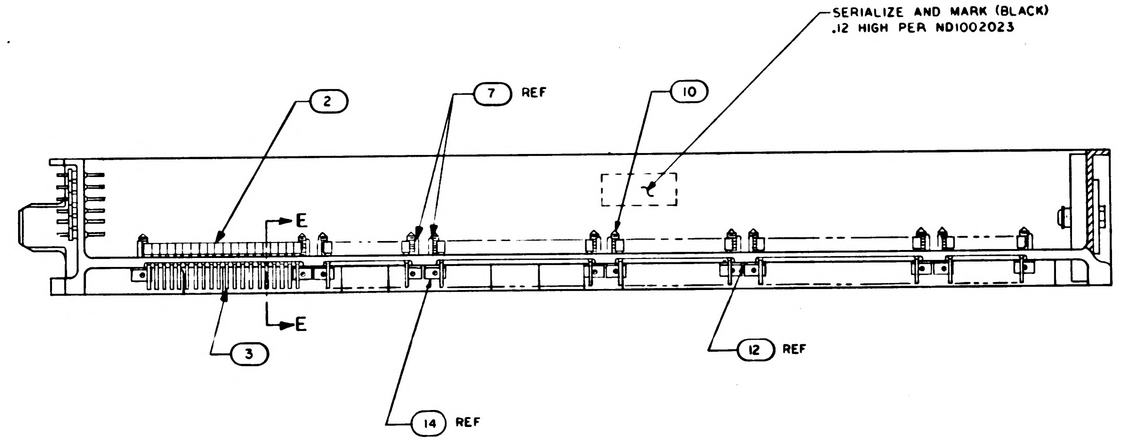
FRAME ASSEMBLY
TRAY 4

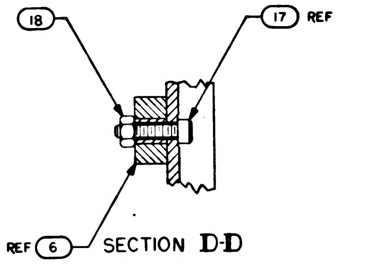
CODE IDENT NO.	SIZE	NASA DRAWING NO.
	E	1021214

SCALE 1/1 WT SHEET 2 OF 2

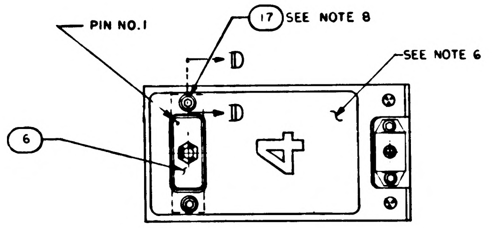
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12[illegible]	24 SEP 64	
B	REVISED PER TDRR 14321	25 NOV 64	
C	REVISED PER TDRR 166[illegible]	26-FEB-65	

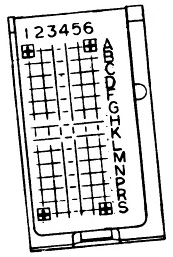

PARTIAL SECTION E-E
180 PLACES

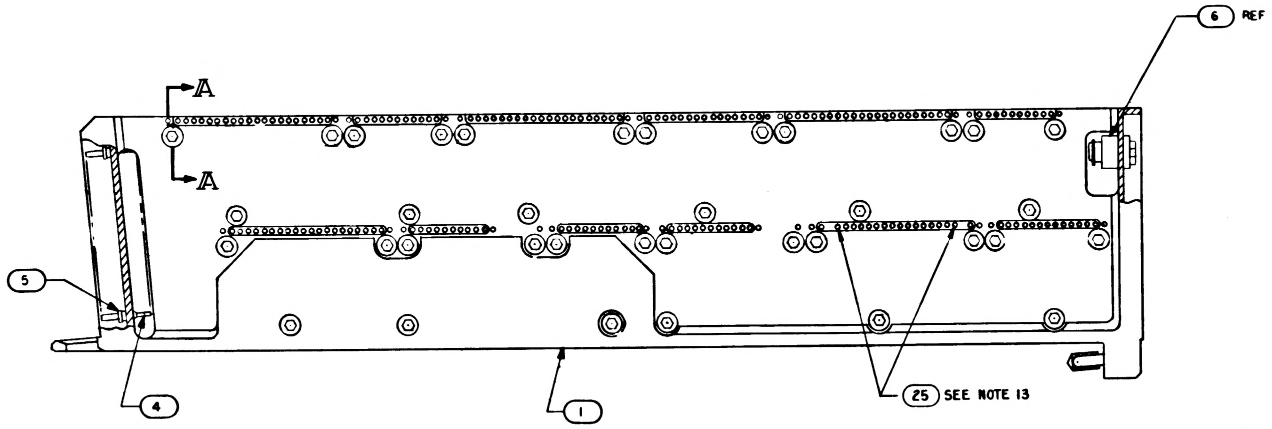


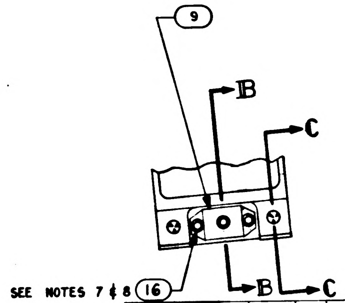


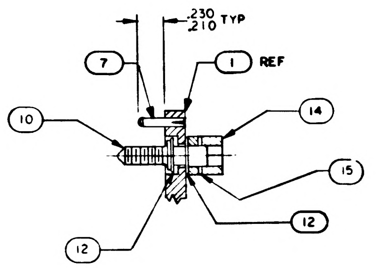
SECTION D-D
SCALE 2/1



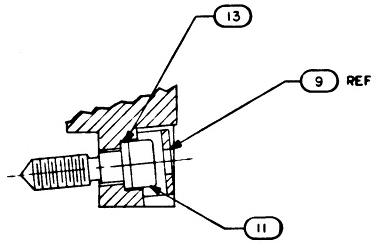




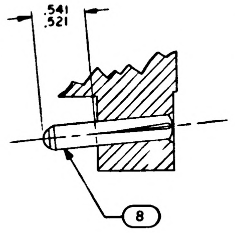




SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
B1B	45A1J14- 7
B1E	- 8
B1F	- 9
B2B	- 11
B2E	- 12
B2F	- 4
B3B	- 2
B3E	- 3
B3F	- 10
34B	- 1
34E	- 5
B4F	45A1J14- 6

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. ASSEMBLE TEM NUMBERS 2,3,4, AND 5 PER ND 1002136
4. BOND ITEM 22, 19 AND 20 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007144.
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
13. BOND ITEM 25 IN HOLES 45A4J9-3 & -17 PER ND 1002004, TYPE I.

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			2		25	1008256	PIN, POLARIZING
			1		24	1021205-006	RECEPTACLE, DS TYPE
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021234	WIRING HARNESS B
			X		21	1008453	WIRING DIAGRAM
			1		20	1015742	WIRE LIST A-A
			1		19	1015736	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS-16995-11	SCREW, CAP, SOCKET HD
			3		16	MS-16995-10	SCREW, CAP, SOCKET HD
			36		15	MS-171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, [illegible]
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			180		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			180		2	1006774	INSULATOR
			1		1	1008524	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021224-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
− —	−.02	−1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

DRAWN E. Tamsen DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL 14 July

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMB
TRAY 4

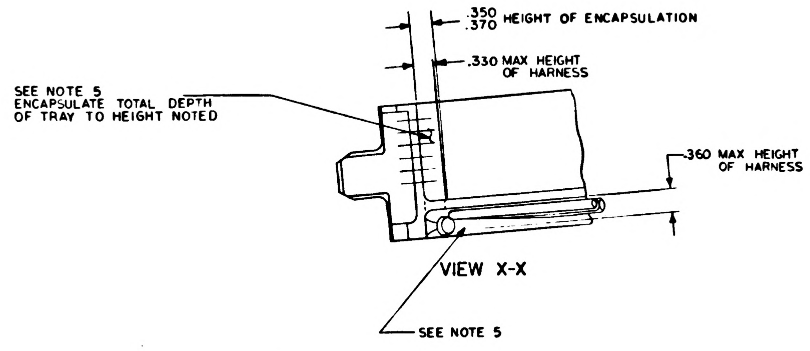
CODE IDENT NO.
SIZE E
1021214
SCALE 1:1
SHEET OF 2

1021214

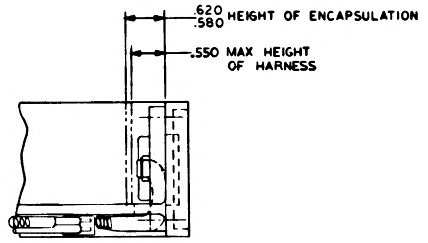
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

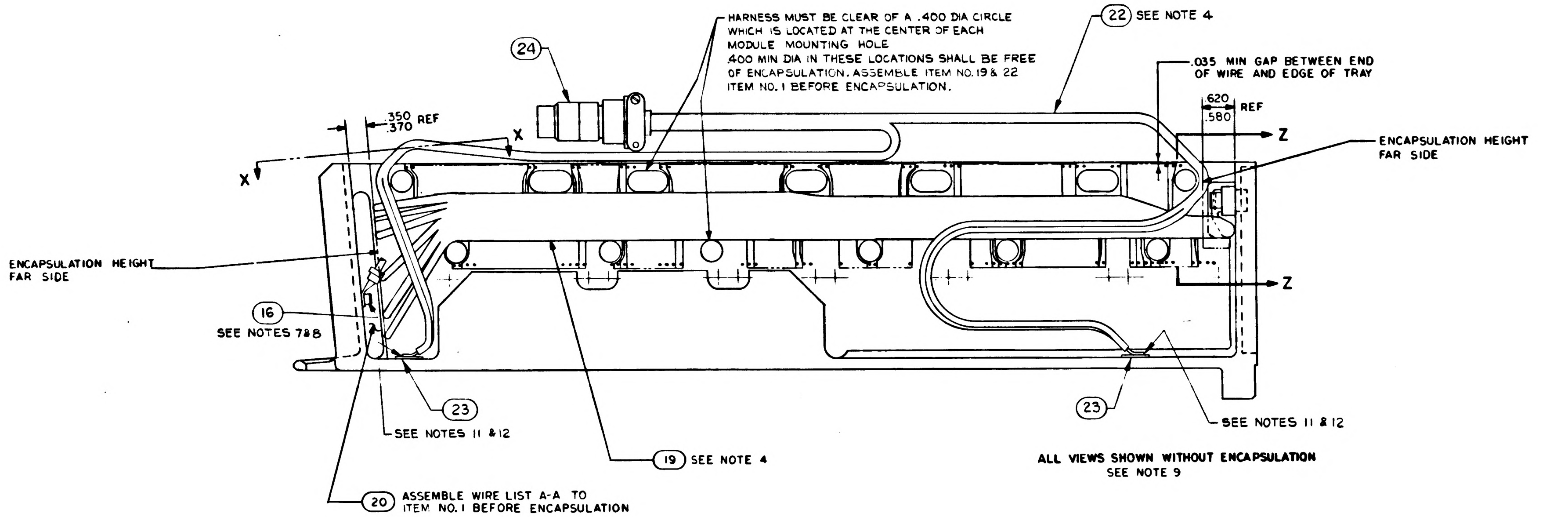
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	[illegible]	[illegible]
B	REVISED PER TDRR 14321	[illegible]	[illegible]
C	REVISED PER TDRR 16643	[illegible]	[illegible]

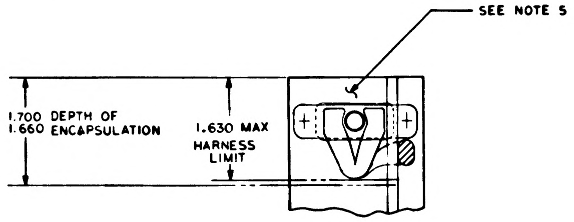

.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 5

VIEW X-X

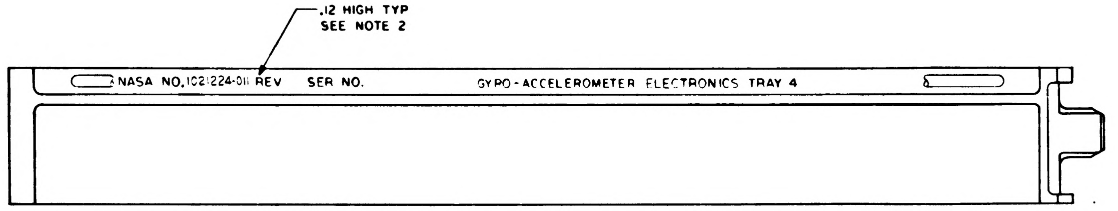

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 & 22 ITEM NO. 1 BEFORE ENCAPSULATION.
22 SEE NOTE 4
24
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
.350
.370 REF
X
X
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7 & 8
23
SEE NOTES 11 & 12
23
SEE NOTES 11 & 12
19 SEE NOTE 4
20 ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021224-011 REV
SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

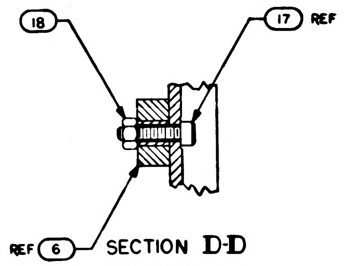
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

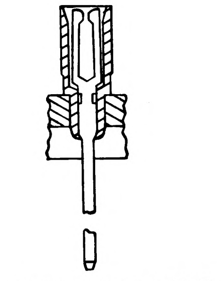
1021224-011		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS ±.02 ANGLES ±1° DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-[illegible]	MANNED SPACECRAFT CENT HOUSTON, TEXAS
NEXT ASSY	USED ON	MATERIAL —	DRAWN E. Tamm[illegible] DATE [illegible] '64	FRAME ASSEMBLY TRAY 4
APPLICATION		HEAT TREATMENT —	CHECKED [illegible] 5 Jul 64	
		FINAL FINISH —	APPROVAL Kosberg 8/5/64	
			APPROVAL [illegible] 8 Jun 64	
			NASA APPROVAL [illegible]	CODE IDENT NO. — SIZE E — NASA DRAWING NO. 1021214
			MIT APPROVAL [illegible] 14 Jul 64	SCALE 1/1 — WT — SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

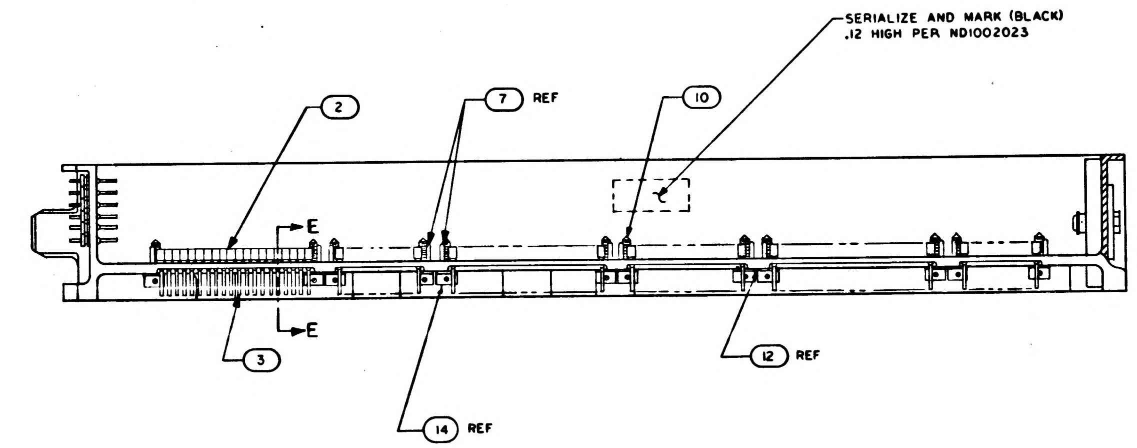
REVISIONS DRR 10707			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 126	26 SEP 64	CP
B	REVISED PER TDRR 14321	25 NOV 64	JK
C	REVISED PER TDRR 1664	26 FEB 65	FF
D	REVISED PER TDRR 16980	9 MAR 65	JJJ FF

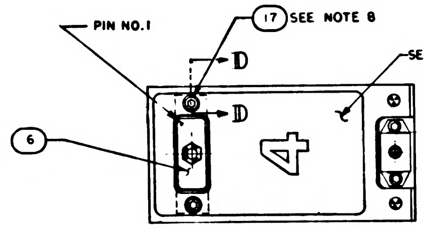


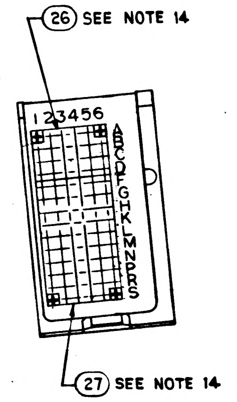
SECTION D-D
SCALE 2/1

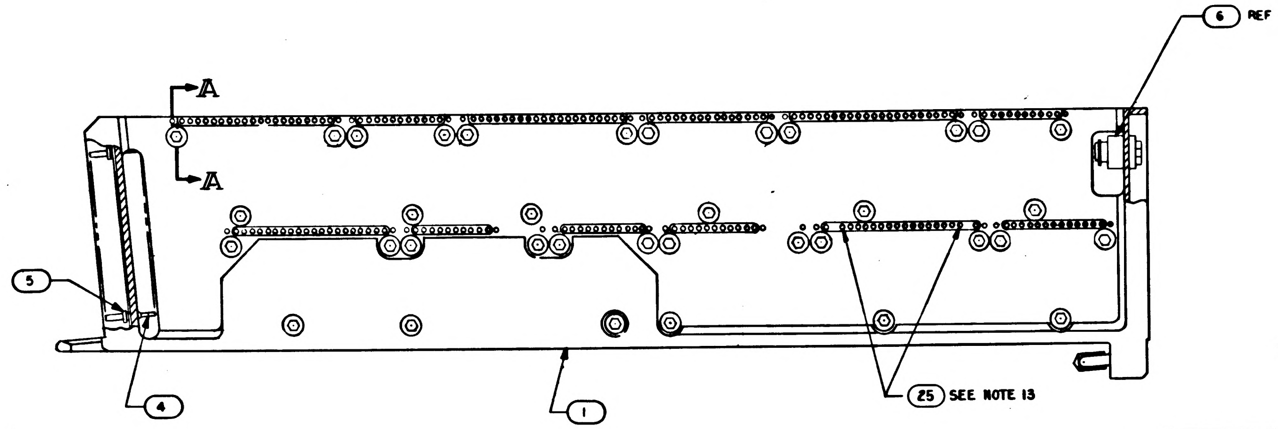


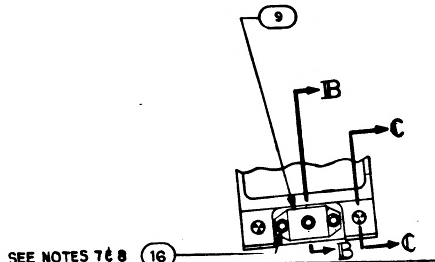
PARTIAL SECTION E-E
180 PLACES



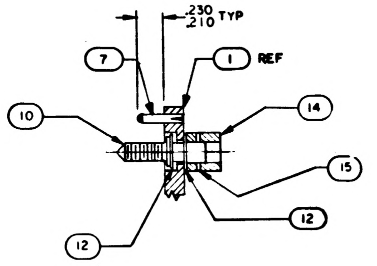




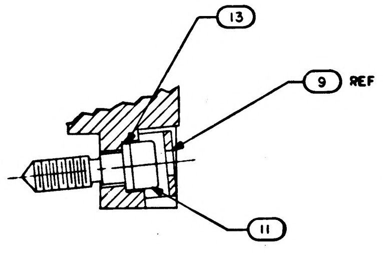




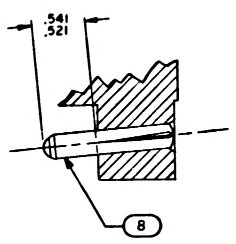
TERMINATION CHART	
FROM	TO
B1B	45A1J14- 7
B1E	-8
B1F	-9
B2B	-11
B2E	-12
B2F	-4
B3B	-2
B3E	-3
B3F	-10
B4B	-1
B4E	-5
B4F	45A1J14- 6



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. ASSEMBLE ITEM NUMBERS 2,3,4, AND 5 PER ND 1002136
4. BOND ITEM 22, 19 AND 20 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005
   ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60
   ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007,144
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
13. BOND ITEM 25 IN HOLES 45A4J9-3 & -17 PER ND 1002004, TYPE I.
14. BOND ITEM NUMBERS 26 AND 27 TO ITEM NUMBER 5 PER ND 1002237.

			1		27	1008552	GASKET
			1		26	1008551	GASKET
			2		25	1008256	PIN, POLARIZING
			1		24	1021205-006	RECEPTACLE, DS TYPE
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021234	WIRING HARNESS B
			X		21	1008453	WIRING DIAGRAM
			1		20	1015742	WIRE LIST A-A
			1		19	1015736	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS-16995-11	SCREW, CAP, SOCKET HD
			3		16	MS-16995-10	SCREW, CAP, SOCKET HD
			36		15	MS-171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			180		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			180		2	1006774	INSULATOR
			1		1	1008524	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021224-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
– —	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN P. Tamson DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL 14 July

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

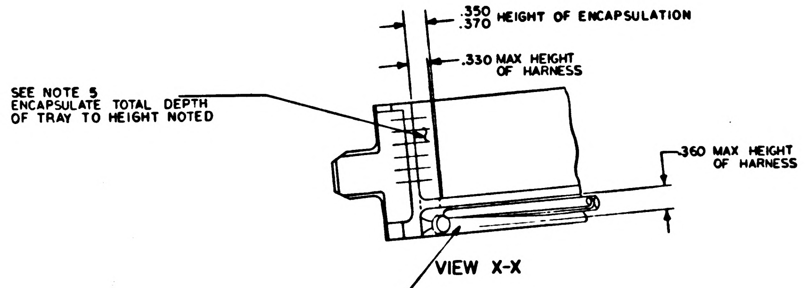
CODE IDENT NO.
SIZE E
1021214
SCALE 1:1
SHEET 1 OF 2

1021214

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

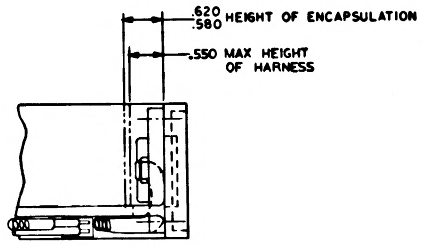
REVISIONS TDRR 10[illegible]

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12623	[illegible]	[illegible]
B	REVISED PER TDRR 14321	29 NOV 64	J.K.
C	REVISED PER TDRR 16643	26 FEB 65	[illegible]
D	REVISED PER TDRR 16980	9 MAR 65	JJJ


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS

VIEW X-X

SEE NOTE 5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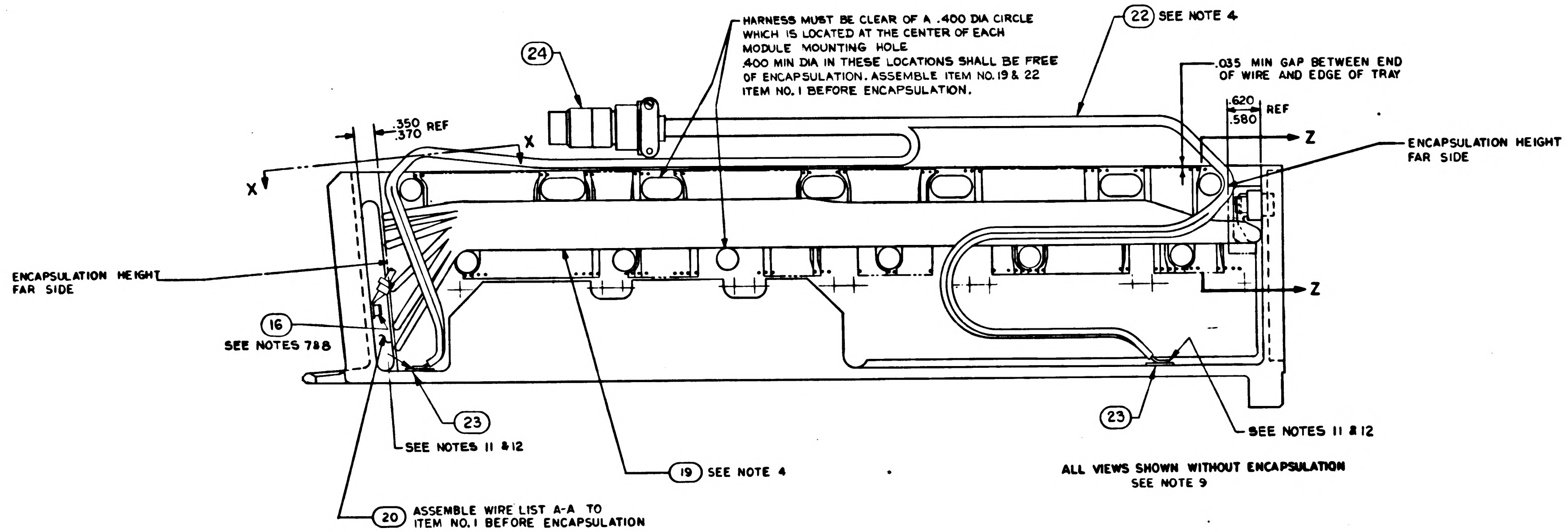
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS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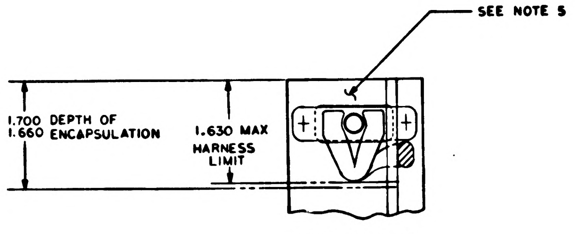
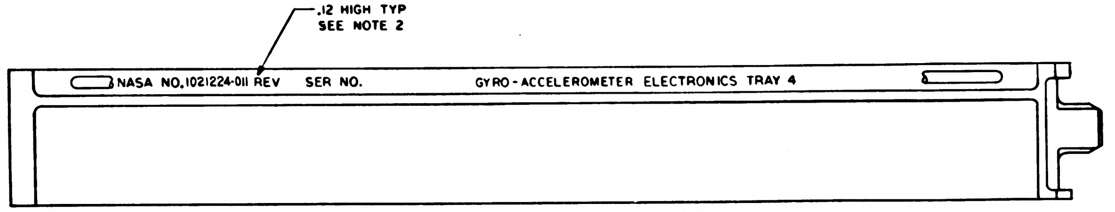
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 & 22 ITEM NO. 1 BEFORE ENCAPSULATION.
22 SEE NOTE 4
24
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
.620
.580 REF
X
X
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7&8
23
SEE NOTES 11 & 12
23
SEE NOTES 11 & 12
19 SEE NOTE 4
20 ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021224-011 REV SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021224-011	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB CAMBRIDGE, MASS
CONTRACT NAS 9-[illegible]
DRAWN R. [illegible] DATE 1 JUN 64
CHECKED [illegible] 5 JUL 64
APPROVAL [illegible]
APPROVAL [illegible] 8 JUN 64
[illegible] 6 JUL 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 14 Jul 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021214
SCALE 1/1
WT
SHEET 2 OF 2

1021214 D

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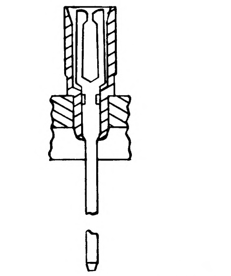
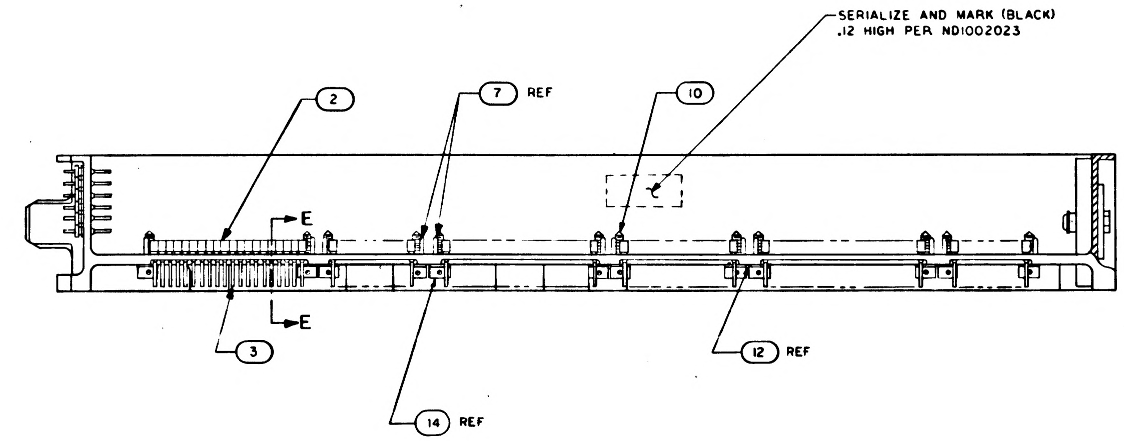
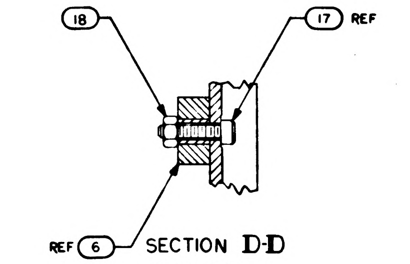
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 1262	SEP 64	
B	REVISED PER TDRR 14321	23 NOV 64	
C	REVISED PER TDRR 1664	26-FEB-65	
D	REVISED PER TDRR 16980	9 MAR 65	
E	REVISED PER TDRR 20118	JUN-65	



PARTIAL SECTION E-E

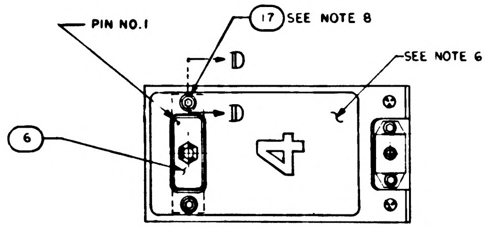
180 PLACES

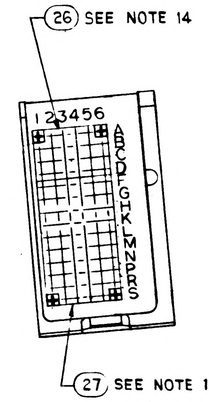


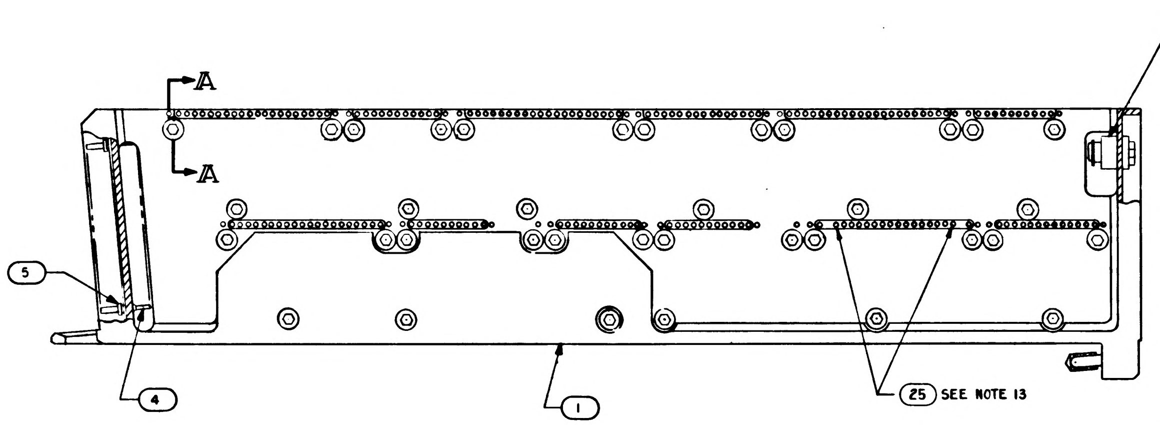


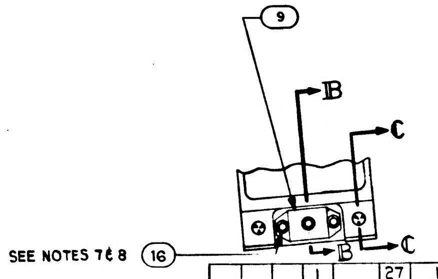
SECTION D-D

SCALE 2/1

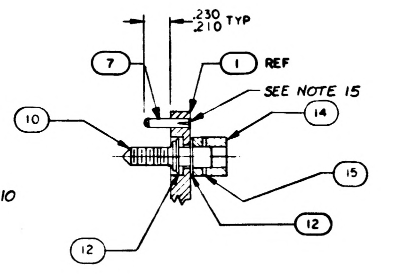






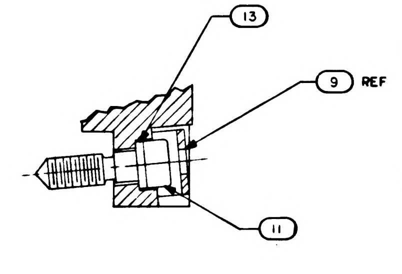


TERMINATION CHART	
FROM	TO
B1B	45A1J14- 7
B1E	- 8
B1F	- 9
B2B	- 11
B2E	- 12
B2F	- 4
B3B	- 2
B3E	- 3
B3F	- 10
34B	- 1
34E	- 5
B4F	45A1J14- 6



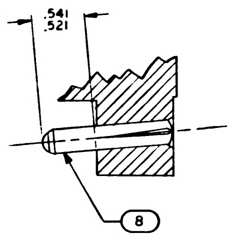
SECTION A-A

SCALE 2/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PPESCPIBED BY MIL-D-70327.
2. MARK PER ND1002019 WHITE.
3. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND 1002136.
4. BOND ITEMS 22, 19 AND 20 TO ITEM 1 PER ND 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007144.
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
13. BOND ITEM 25 IN HOLES 45A4J9-3 & -17 PER ND 1002004, TYPE I.
14. BOND ITEM NUMBERS 26 AND 27 TO ITEM NUMBER 5 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE I.

LIST OF PARTS AND MATERIALS

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		27	1008552	GASKET
			1		26	1008551	GASKET
			2		25	1008256	PIN, POLARIZING
			1		24	1021205-006	RECEPTACLE DS TYPE
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021234	WIRING HARNESS B
			X		21	1008453	WIRING DIAGRAM
			1		20	1015742	WIRE LIST A A
			1		19	1015736	WIRING HARNESS A
			2		18	MS 21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS-16995-11	SCREW, CAP, SOCKET HD
			3		16	MS-16995-10	SCREW, CAP, SOCKET HD
			36		15	MS-171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			180		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			180		2	1006774	INSULATOR
			1		1	1008524	FRAME

QUANTITY REQUIRED

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021224-011	1021227-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN D. Tamsen DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO. 80230
SIZE E
1021214
SCALE 1:1
SHEET OF 2

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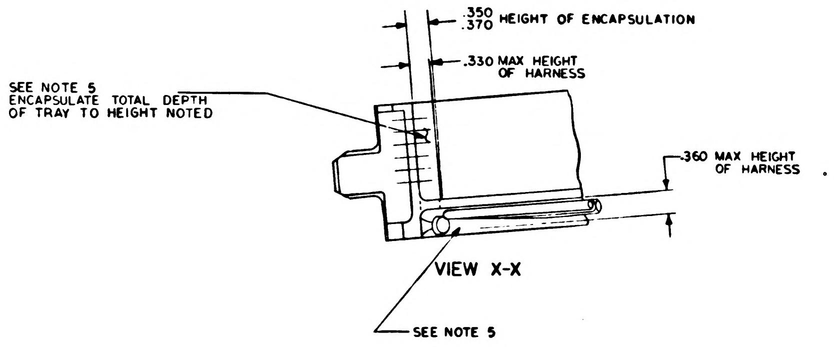
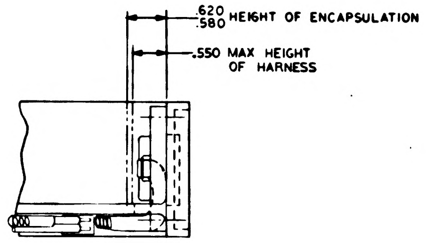
A	REVISED PER TDRR 12623	26 SEP 64	
B	REVISED PER TDRR 14321	23 NOV 64	
C	REVISED PER TDRR 16643	26 FEB 65	
D	REVISED PER TDRR 6980	3 MAR 65	
E	REVISION STATUS CHANGED	2 [illegible] 65	


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 5

VIEW X-X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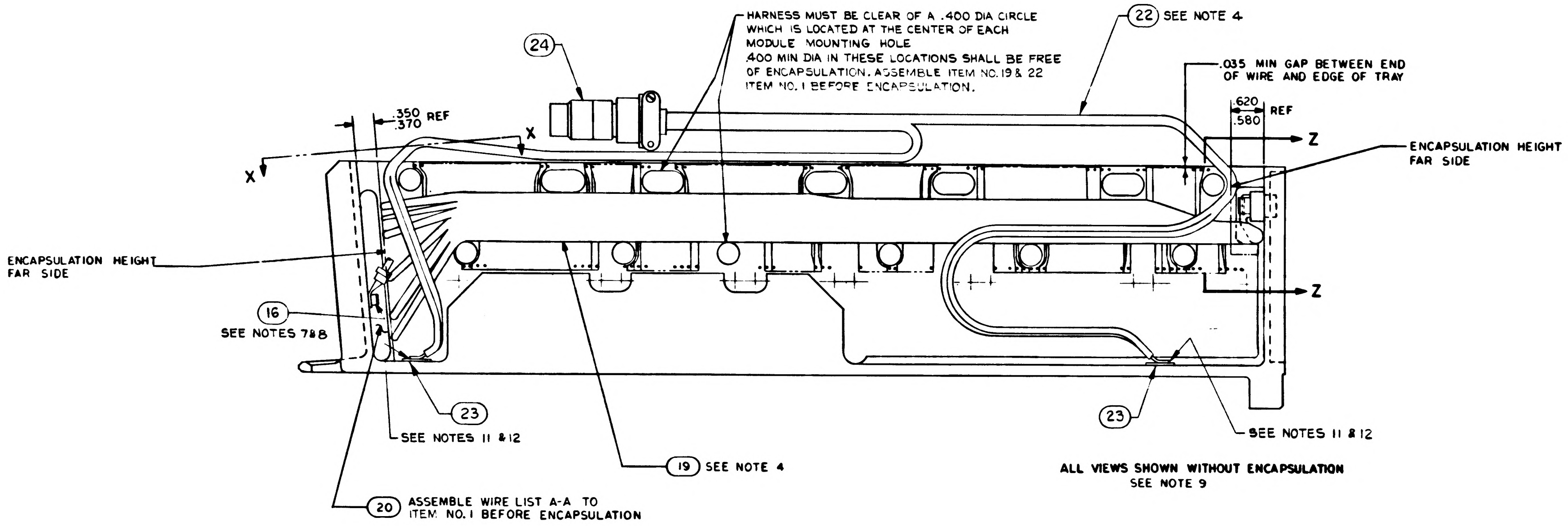
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS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22 SEE NOTE 4
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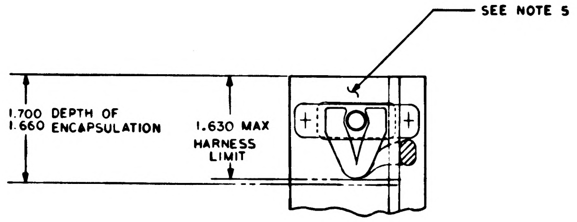
.580 REF
Z
ENCAPSULATION HEIGHT FAR SIDE
.350
.370 REF
X
X
ENCAPSULATION HEIGHT FAR SIDE
Z
16
SEE NOTES 7&8
23
SEE NOTES 11 & 12
19 SEE NOTE 4
20 ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION
23
SEE NOTES 11 & 12

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9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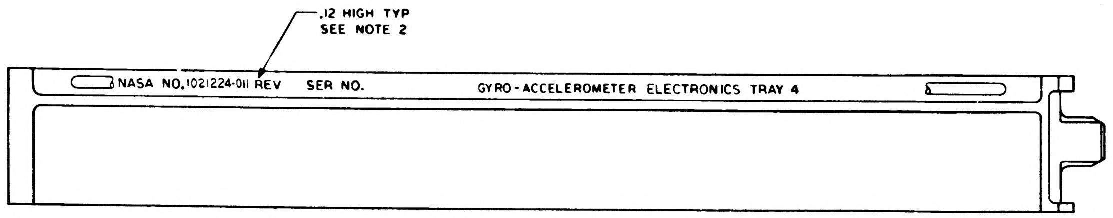
1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021224-011 REV SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021224-011	

APPLICATION

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TOLERANCES ON
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DECIMALS ±.02
ANGLES ±1°
DO NOT SCALE THIS DRAWING
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HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497
DRAWN DATE
CHECKED 5 JUN 64
APPROVAL 3/5/64
APPROVAL 8 JUN 64
8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 JUL 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

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NASA DRAWING NO. 1021214
SCALE 1/1
WT
SHEET 2 OF 2

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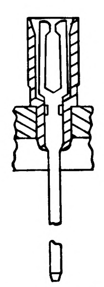
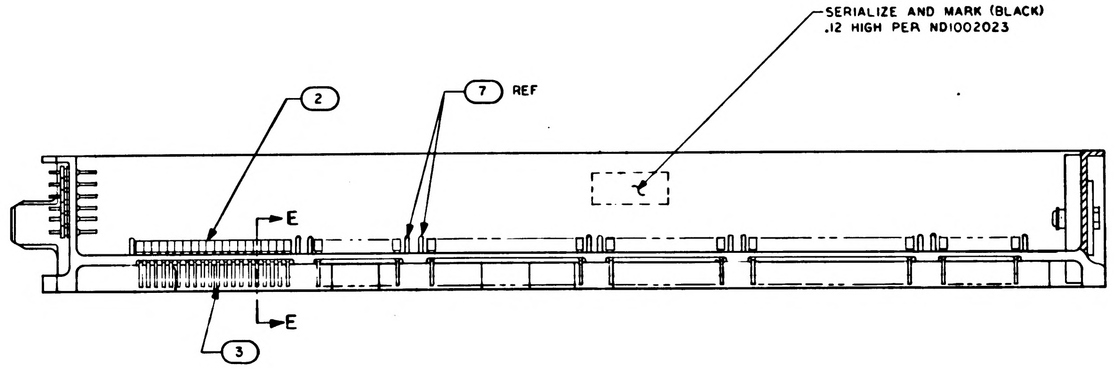
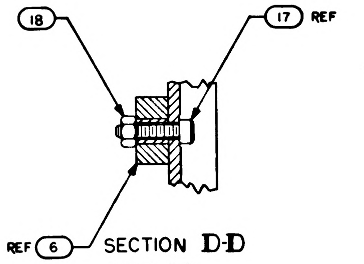
D	REVISED PER TDRR 16980	9 MAR 65	
E	REVISED PER TDRR 20118	[illegible] JUN 65	
F	REVISED PER TDRR 2[illegible]8[illegible]	[illegible] JUL 65	

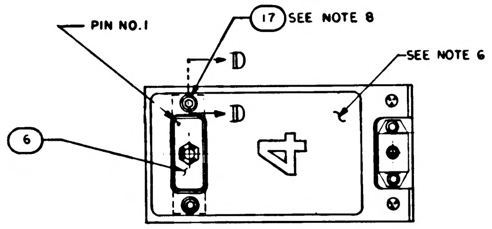


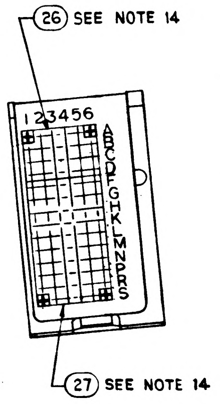
PARTIAL SECTION E-E
180 PLACES

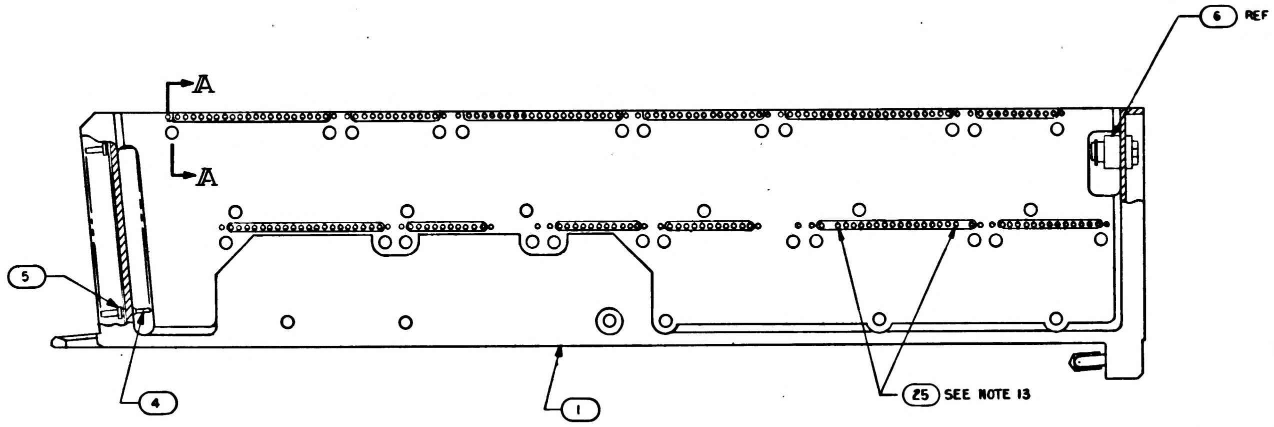


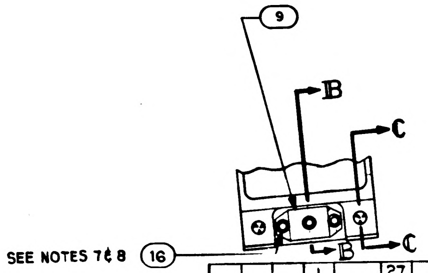


SECTION D-D
SCALE 2/1









TERMINATION CHART	
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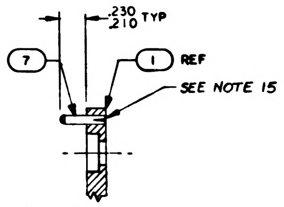
B1E	- 8
B1F	- 9
B2B	- 11
B2E	- 12
B2F	- 4
B3B	- 2
B3E	- 3
B3F	- 10
B4B	- 1
B4E	- 5
B4F	45A1J14- 6



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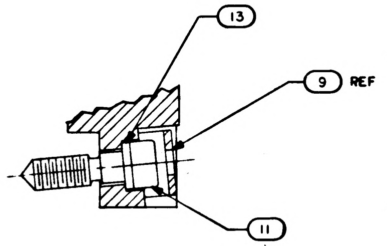

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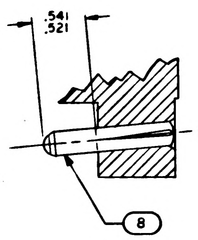
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019 WHITE.
3. ASSEMBLE ITEM NUMBERS 2,3,4 AND 5 PER ND 1002136.
4. BOND ITEMS 22, 19 AND 20 TO ITEM 1 PER ND 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007144.
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.
13. BOND ITEM 25 IN HOLES 45A4J9-3 & -17 PER ND 1002004, TYPE I.
14. BOND ITEM NUMBERS 26 AND 27 TO ITEM NUMBER 5 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE I.

			1		27	1008552	GASKET
			1		26	1008551	GASKET
			2		25	1008256	PIN, POLARIZING
			1		24	1021205-006	RECEPTACLE, DS TYPE
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		22	1021234	WIRING HARNESS B
			X		21	1008453	WIRING DIAGRAM
			1		20	1015742	WIRE LIST A A
			1		19	1015736	WIRING HARNESS A
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS-16995-11	SCREW, CAP SOCKET HD
			3		16	MS-16995-10	SCREW CAP SOCKET HD
			~~36~~		~~15~~	~~MS-171433~~	~~PIN, SPRING~~
			~~36~~		~~14~~	~~1004207~~	~~DRIVE CYLINDER~~
			1		13	1008099-2	WASHER
			~~12~~		~~12~~	~~1004206~~	~~WASHER, THRUST~~
			1		11	1008098	SCREW SOCKET HD
			~~36~~		~~10~~	~~[illegible]~~	~~SCREW, JACK~~
			1		9	1001317	RETAINER JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			180		3	1006781-2	CONTACT, WRAPOST FEMALE MIN
			180		2	1006774	INSULATOR
			1		1	1008524	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021224-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Tamsen DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

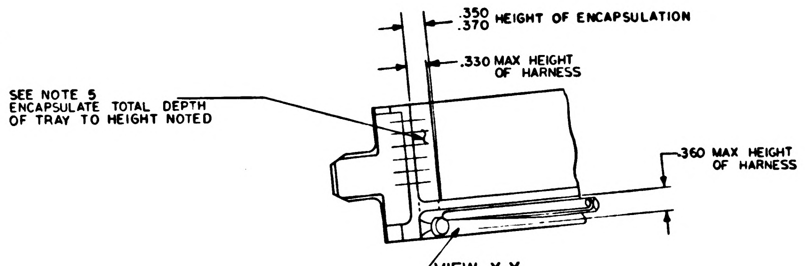
FRAME ASSEMBLY
TRAY 4

CODE IDENT NO. 80230
SIZE E
1021214
SCALE 1:1
SHEET OF 2

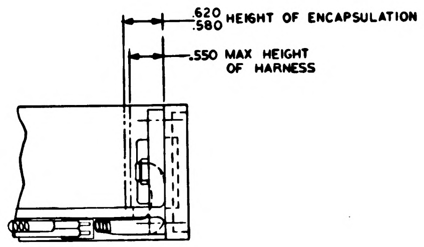
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

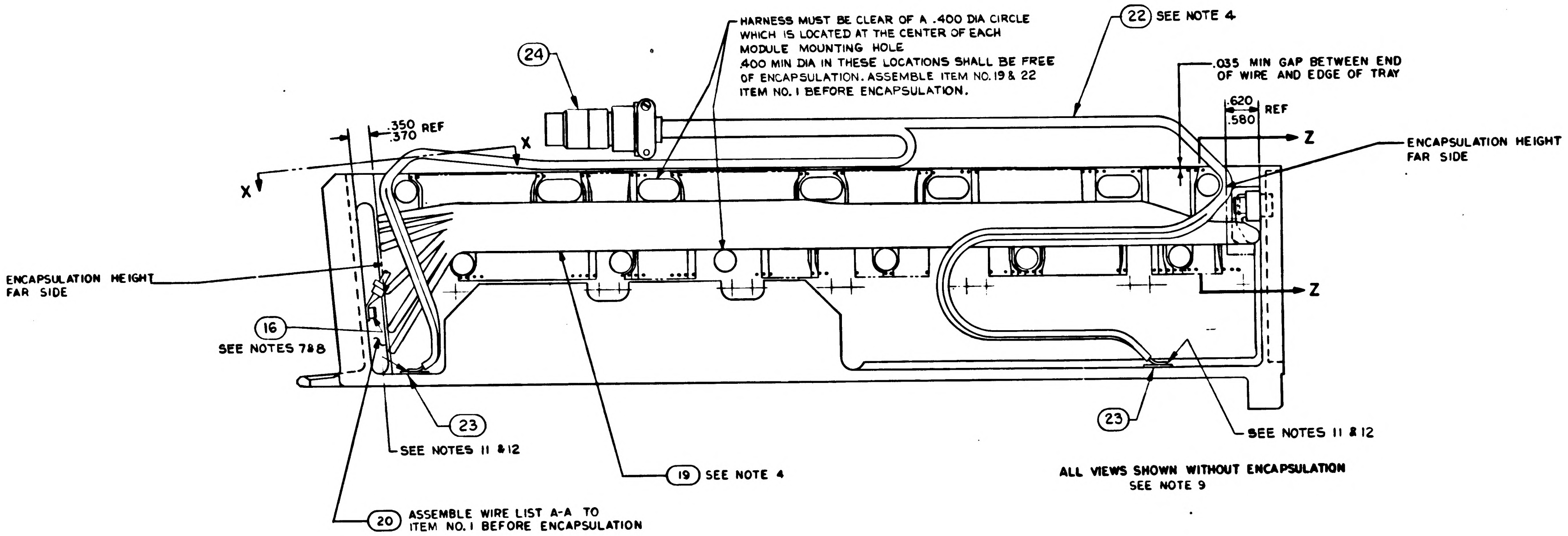
REVISIONS TDRR 16

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 11623	26 SEP 64	
B	REVISED PER TDRR 14321	23 NOV 64	
C	REVISED PER TDRR 16643	26-FEB-65	
D	REVISED PER TDRR 16980	9 MAR 65	JJ
E	REVISION STATUS CHANGED	21-JUN-65	
F	REVISION STATUS CHANGED	21 JUL 65	

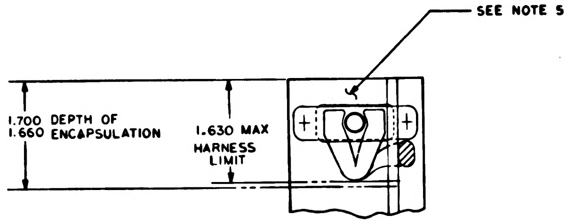

.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 5

VIEW X-X

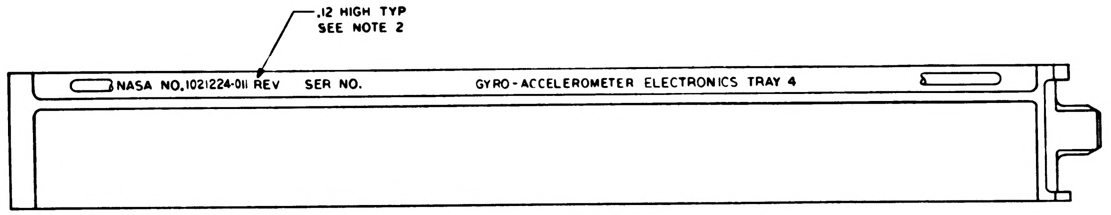

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 & 22 ITEM NO. 1 BEFORE ENCAPSULATION.
22 SEE NOTE 4
24
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
X
X
.620
.580 REF
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
Z
16
SEE NOTES 7 & 8
23
SEE NOTES 11 & 12
23
SEE NOTES 11 & 12
19 SEE NOTE 4
20 ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 DEPTH OF
1.660 ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP SEE NOTE 2
NASA NO. 1021224-011 REV SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021224-011	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497
DRAWN R. Tamson DATE '64
CHECKED 5 Jun 64
APPROVAL 5/5/64
APPROVAL 8 Jun 64
5 Jun 64
NASA APPROVAL 7/15/64
MIT APPROVAL 14 Jul 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

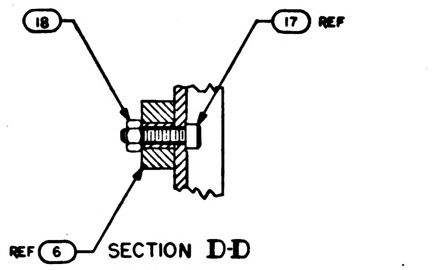
CODE IDENT NO 80230
SIZE E
NASA DRAWING NO. 1021214
SCALE 1/1
WT
SHEET 2 OF 2

1021214

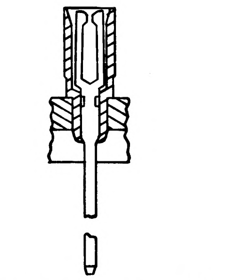
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

SYM	DESCRIPTION	DATE	APPROVAL

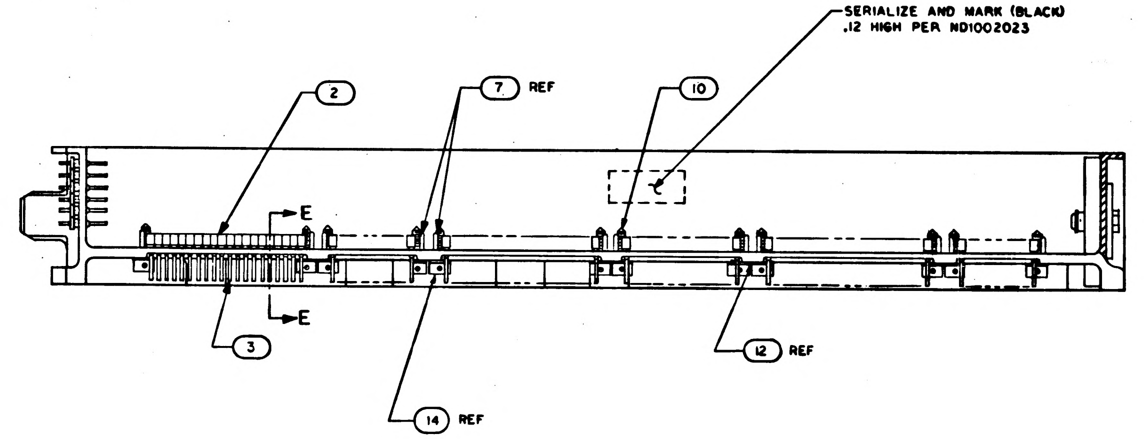
REVISIONS TDRR 10907

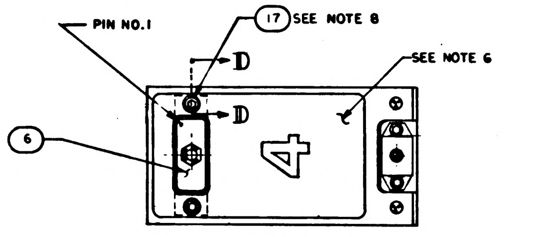


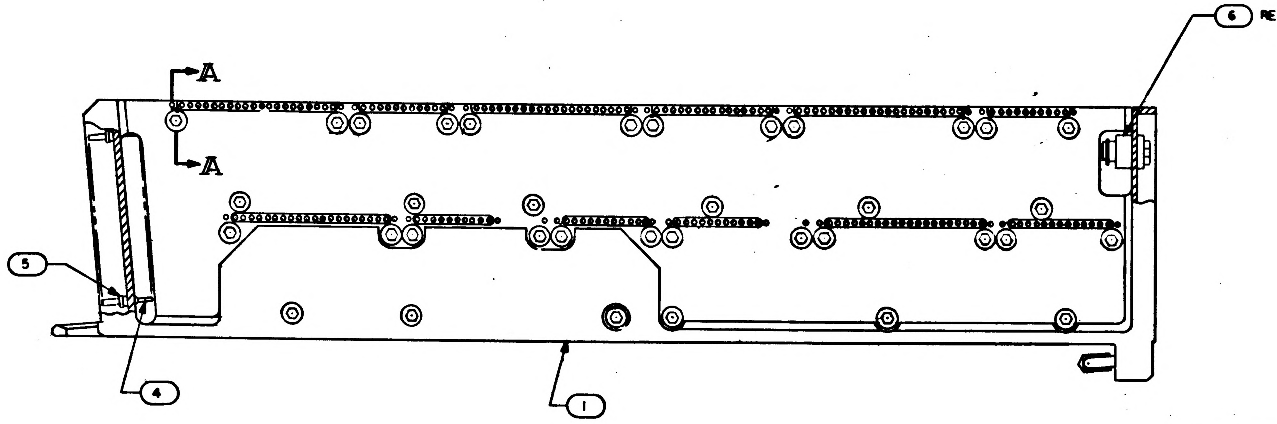
SECTION D-D
SCALE 2/1

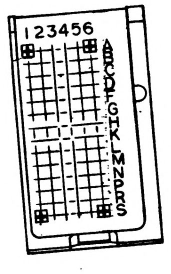


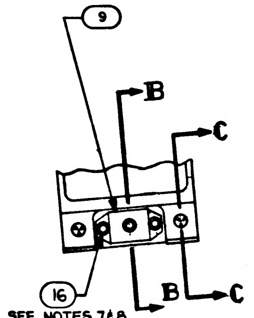
PARTIAL SECTION E-E
184 PLACES





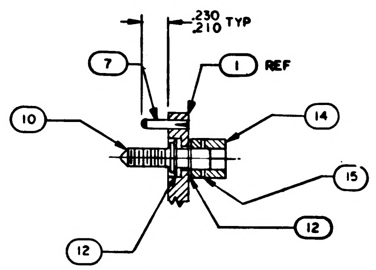




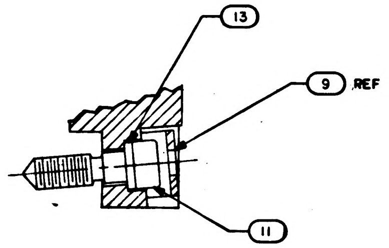


SEE NOTES 7&8

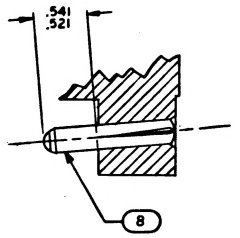
TERMINATION CHART	
FROM	TO
B1B	45A1J14- 7
B1E	-8
B1F	-9
B2B	-11
B2E	-12
B2F	-4
B3B	-2
B3E	-3
B3F	-10
B4B	-1
B4E	-5
B4F	45A1J14- 6



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK PER ND1002019 WHITE
3. ASSEMBLE ITEM NUMBERS 2,3,4, AND 5 PER ND 1002136
4. BOND ITEM 22,19 AND 20 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005
ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN 60
ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007144
11. PRIOR TO INSTALLATION OF ITEM NO. 22 COVER ITEM NO. 23 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 22 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND 1002004 TYPE I.

			1		24	1021205-006	RECEPTACLE, DS TYPE
			AR		23	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, 38 WIDE
			1		22	1021234	WIRING HARNESS B
			X		21	1010094	WIRING DIAGRAM
			1		20	1015742	WIRE LIST A-A
			1		19	1015736	WIRING HARNESS A
			2		18	MS 21045 C 08	NUT, SELF-LOCKING HEX
			2		17	MS-16995-11	SCREW, CAP, SOCKET HD
			3		16	MS-16995-10	SCREW, CAP, SOCKET HD
			36		15	MS-171433	PIN, SPRING
			36		14	1004207	DRIVE CYLINDER
			1		13	1008099-2	WASHER
			72		12	1004206	WASHER, THRUST
			1		11	1008098	SCREW, SOCKET HD
			36		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			24		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			184		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			184		2	1006774	INSULATOR
			1		1	1008104	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021224-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ — +.02 +1°
- — -.02 -1°
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomasow DATE 1 JUN 64
CHECKED 5 JUN 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO.
SIZE E
1021214
SCALE 1:1
SHEET 1 OF 2

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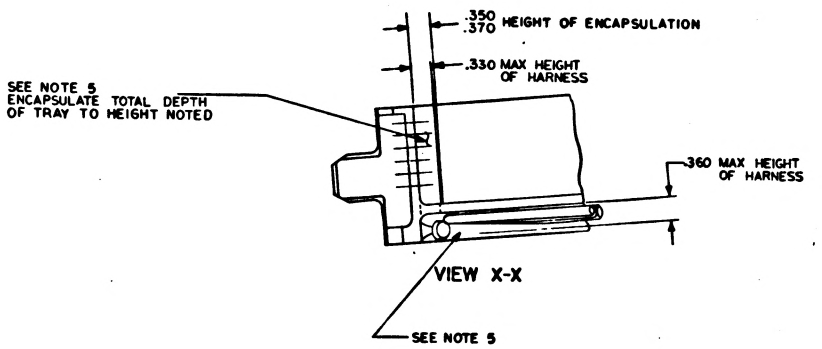
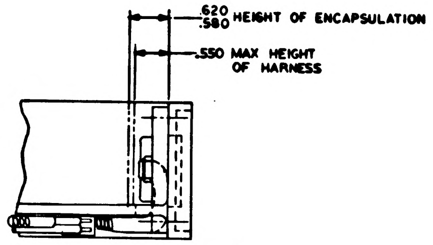
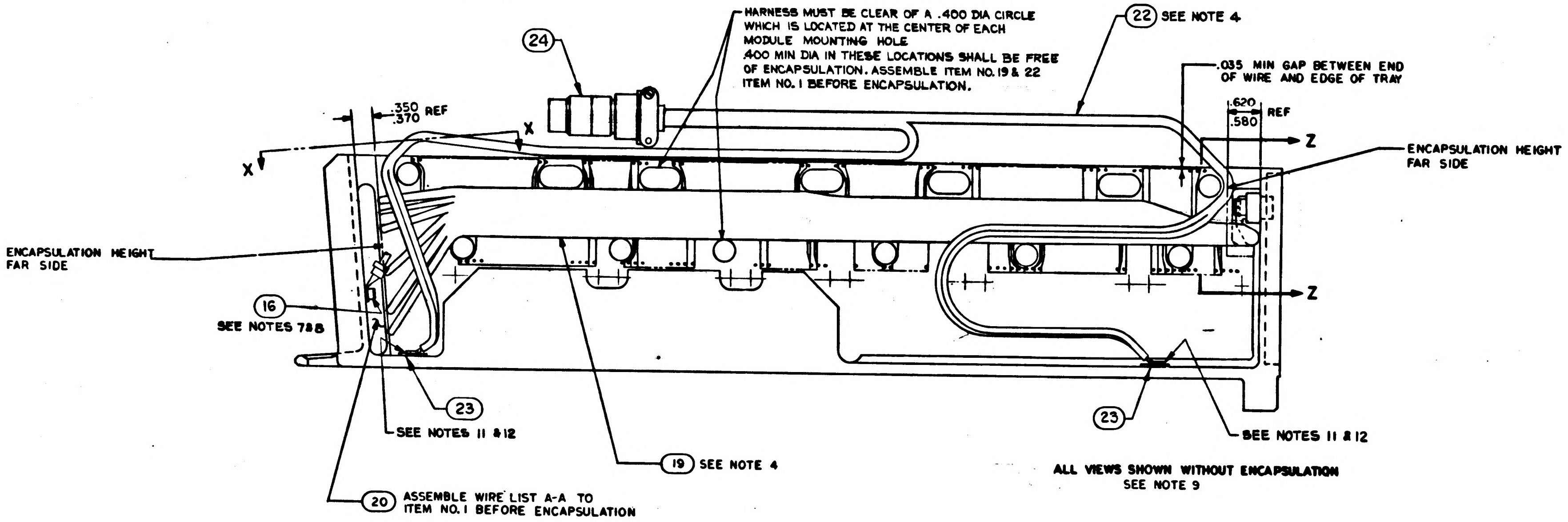
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 5

VIEW X-X


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HEIGHT OF HARNESS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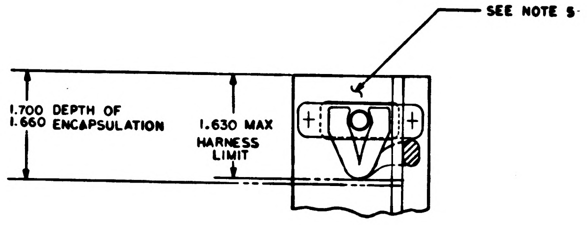
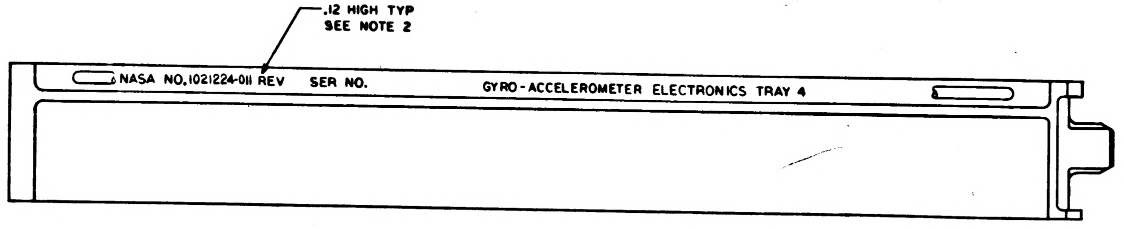
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO. 19 & 22 ITEM NO. 1 BEFORE ENCAPSULATION.
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
.350
.370 REF
X
X
Z
Z
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
16
SEE NOTES 7&8
23
SEE NOTES 11 & 12
19 SEE NOTE 4
20 ASSEMBLE WIRE LIST A-A TO ITEM NO. 1 BEFORE ENCAPSULATION
23
SEE NOTES 11 & 12

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO. 1021224-011 REV SER NO.
GYRO-ACCELEROMETER ELECTRONICS TRAY 4

MARKING VIEW AFTER ENCAPSULATION

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1021224-011	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. Tempson DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 4

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021214
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE. WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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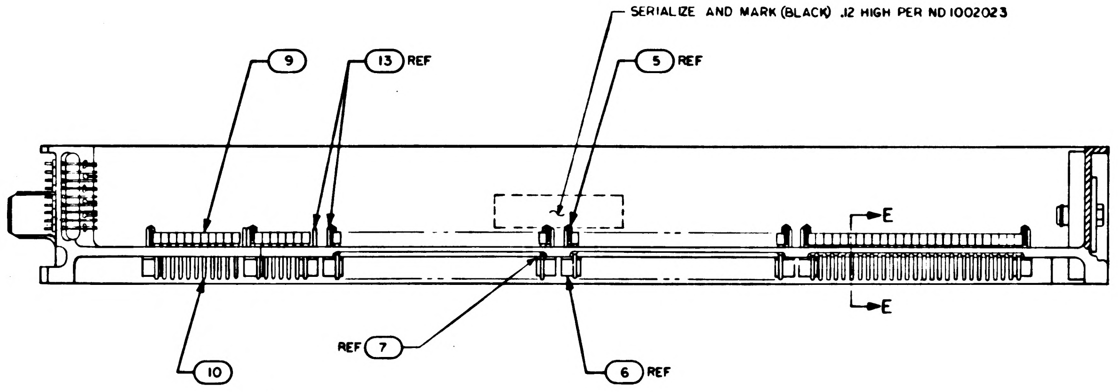
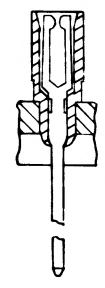
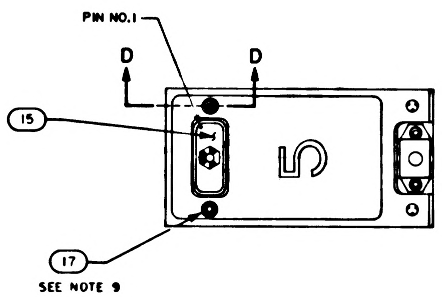
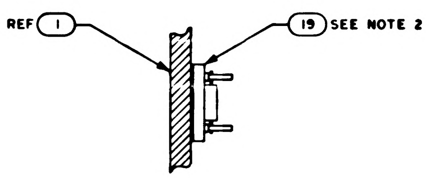


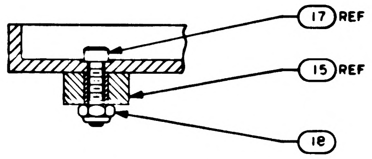


SECTION E-E





PARTIAL SECTION E-E
SCALE: 2/1



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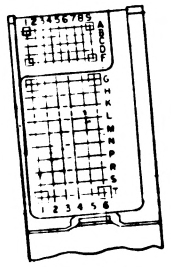
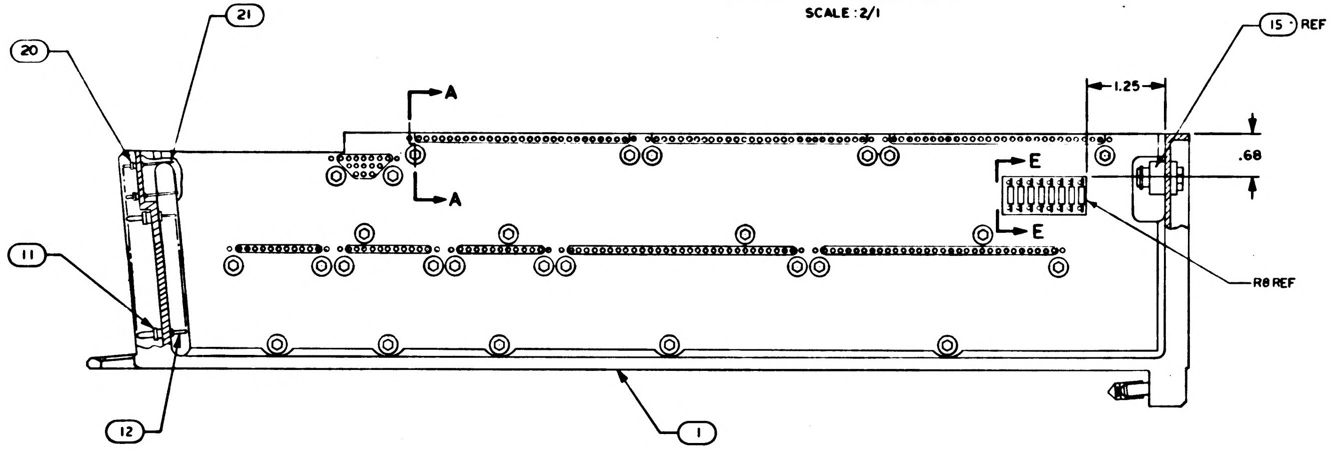
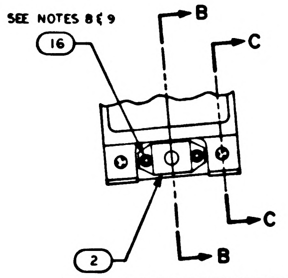
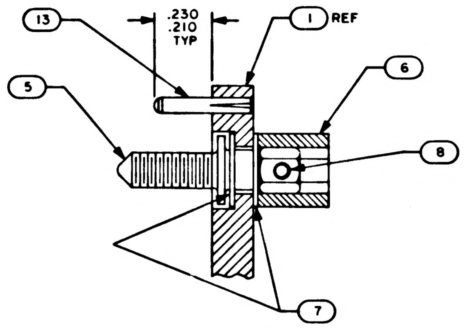
SCALE: 2/1

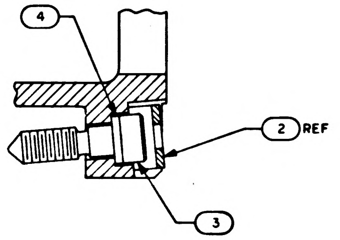




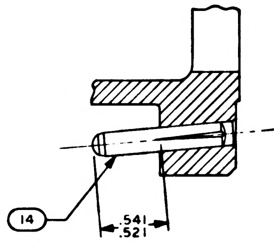




PARTIAL SECTION A-A
SCALE: 4/1



SECTION B-B
SCALE: 2/1



SECTION C-C
SCALE: 2/1

TERMINATIONS	
FROM	TO
COND E1B	45A5J12-2
E1E	45A5J12-3
E1F	45A5J12-4
E2B	45A5J12-5
E2E	45A5J12-6
E2F	45A5J12-7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686
3. MARK PER ND1002019, WHITE
4. ASSEMBLE ITEM NUMBERS 9,10,11 AND 12 PER ND 1002136
5. BOND ITEM NOS. 22,23,24,25,26 AND 27 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
8. COAT THREADS OF ITEM NO 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PROCURE PER PS1007145.
12. PRIOR TO INSTALLATION OF ITEM NO. 27, COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
13. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURACES OF ITEM NO. 27 WITH ND1002004, TYPE 1.

			1		31	1021204-007	CONTACT
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE, DS TYPE
			X		28	1008454	WIRING DIAGRAM
			1		27	1021235	WIRING HARNESS E
			1		26	1015753	WIRING LIST A
			1		25	1015752	WIRING HARNESS D
			1		24	1015751	WIRING HARNESS C
			1		23	1015750	WIRING HARNESS B
			1		22	1015749	WIRING HARNESS A
			45		21	1006782-2	CONTACT, WRAPOST MALE MIN
			45		20	1006775	INSULATOR, MALE WRAPOST MIN
			1		19	1007099	BUFFER RESISTORS ASSEMBLY
			2		18	MS21045C04	NUT, SELF-LOCKING, HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		16	MS16995-3	SCREW, CAP, SOCKET HEAD
			1		15	1010622-1	CONNECTOR, RECEPTACLE
			2		14	1010620-2	PIN, GUIDE
			18		13	1010620-1	PIN, GUIDE
			60		12	1010382-1	CONTACT. BLADE EDGE CONNECTOR
			60		11	1010383-1	INSULATOR, WRAPOST, MALE
			188		10	1006781-2	CONTACT, WRAPOST, FEMALE, MIN
			188		9	1006774	INSULATOR, WRAPOST, FEMALE, MIN
			27		8	MS171433	PIN, SPRING
			54		7	1004206	WASHER, THRUST
			27		6	1004207	DRIVE CYLINDER
			27		5	1008095	SCREW, JACK
			1		4	1008099-2	WASHER
			1		3	1008098	SCREW, SOCKET HEAD
			1		2	1001317	RETAINER, JACK SCREW
			1		1	1008175	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021225-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
−	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION. GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN 1 JUN 64 DATE
CHECKED 3 JUN 64
APPROVAL 6/8/64
APPROVAL 3 Jun 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO
SIZE
1021215
SCALE 1:1
SHEET 1 OF 2

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REVISIONS TDRR 10-

SYM	DESCRIPTION	DATE	APPROVAL
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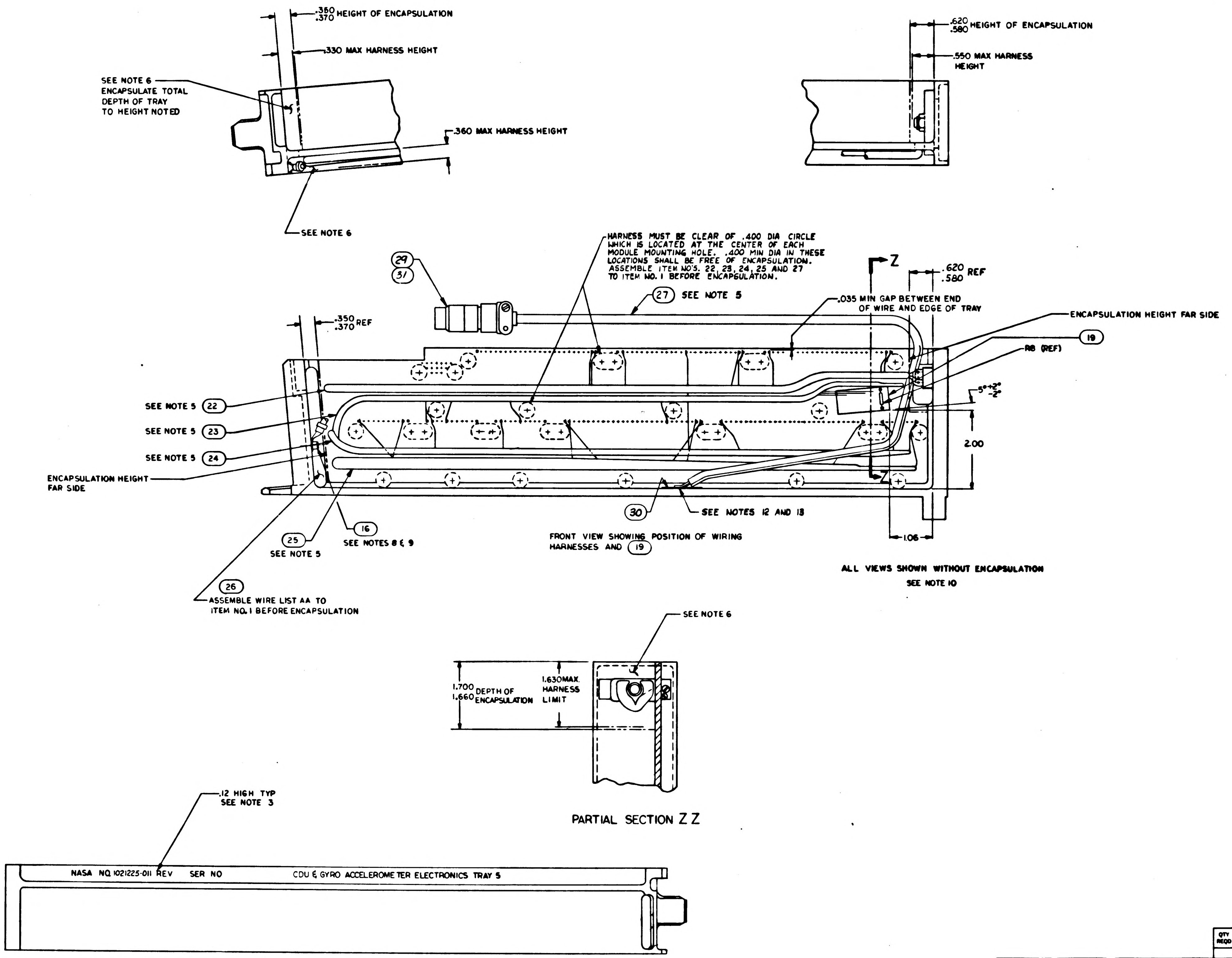

.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6
.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO'S. 22, 23, 24, 25 AND 27 TO ITEM NO. 1 BEFORE ENCAPSULATION.
29
31
27 SEE NOTE 5
Z
.620
.580 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
ENCAPSULATION HEIGHT FAR SIDE
19
R8 (REF)
5° +2° −2°
.350
.370 REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
ENCAPSULATION HEIGHT FAR SIDE
2.00
Z
30
SEE NOTES 12 AND 13
1.06
16
SEE NOTES 8 & 9
25
SEE NOTE 5
FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND 19
ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10
26
ASSEMBLE WIRE LIST AA TO ITEM NO. 1 BEFORE ENCAPSULATION
SEE NOTE 6
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX. HARNESS LIMIT
PARTIAL SECTION Z Z
.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021225-011 REV SER NO CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5
MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021225-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN 2 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 Jun 64
8 Jun 64
NASA APPROVAL
MIT APPROVAL 14

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO. SIZE E NASA DRAWING NO 1021215
SCALE 1/1 WT SHEET 2 OF 2

1021215 A

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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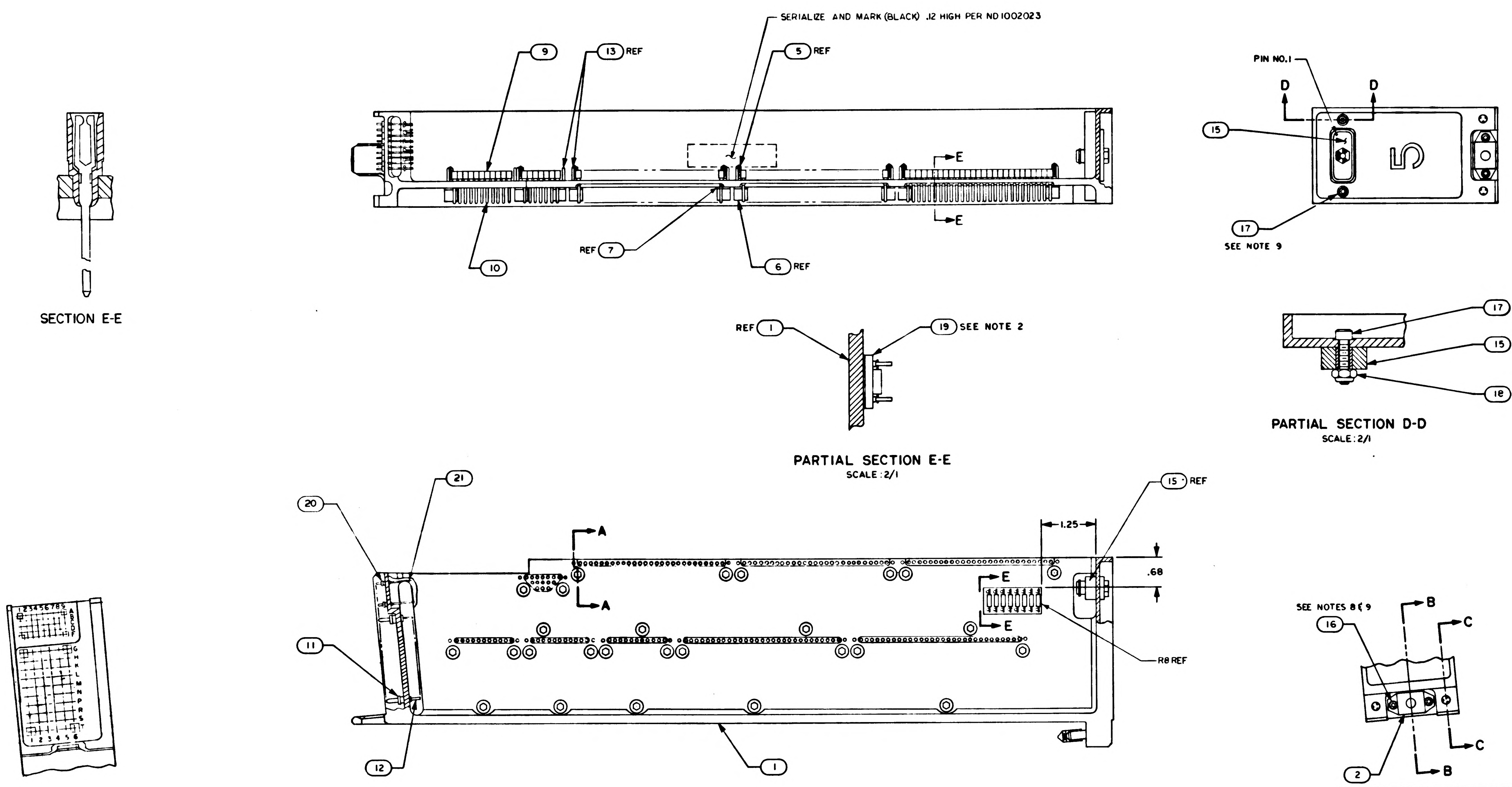
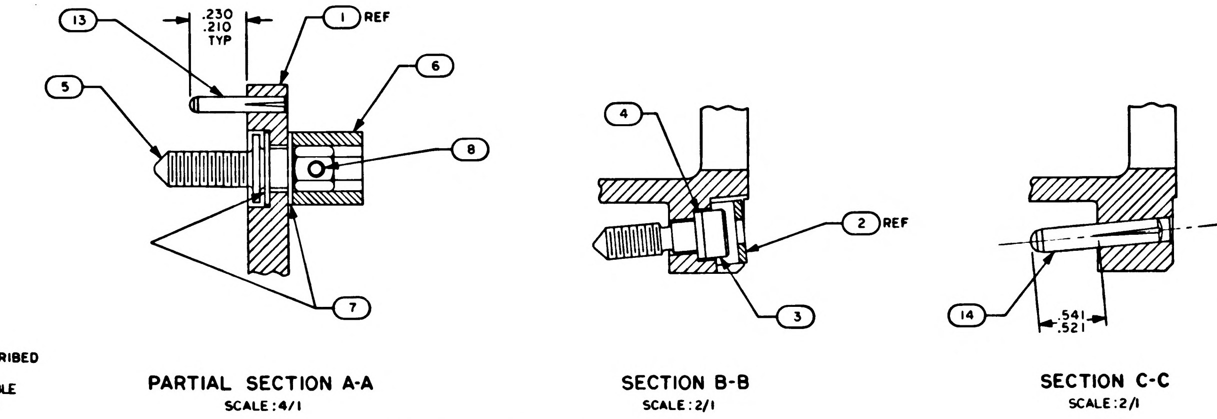
B	REVISED PER TDRR 6643	26-FEB-65	





12. PRIOR TO INSTALLATION OF ITEM NO. 27, COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
13. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURACES OF ITEM NO. 27 WITH ND1002004, TYPE 1.

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686
3. MARK PER ND1002019, WHITE
4. ASSEMBLE ITEM NUMBERS 9, 10, 11 AND 12 PER ND 1002136
5. BOND ITEM NOS. 22, 23, 24, 25, 26 AND 27 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
8. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PROCURE PER PS1007145.

TERMINATIONS	
FROM	TO
COND E1B	45A5J12-2
E1E	45A5J12-3
E1F	45A5J12-4
E2B	45A5J12-5
E2E	45A5J12-6
E2F	45A5J12-7

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		31	1021204-007	CONTACT
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE, DS TYPE
			X		28	1008454	WIRING DIAGRAM
			1		27	1021235	WIRING HARNESS E
			1		26	1015753	WIRING LIST AA
			1		25	1015752	WIRING HARNESS D
			1		24	1015751	WIRING HARNESS C
			1		23	1015750	WIRING HARNESS B
			1		22	1015749	WIRING HARNESS A
			45		21	1006782-2	CONTACT, WRAPOST MALE MIN
			45		20	1006775	INSULATOR, MALE WRAPOST MIN
			1		19	1007099	BUFFER RESISTORS ASSEMBLY
			2		18	MS21045C04	NUT, SELF-LOCKING, HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		16	MS16995-3	SCREW, CAP, SOCKET HEAD
			1		15	1010622-1	CONNECTOR, RECEPTACLE
			2		14	1010620-2	PIN, GUIDE
			18		13	1010620-1	PIN, GUIDE
			60		12	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			60		11	1010383-1	INSULATOR, WRAPOST, [illegible]
			188		10	1006781-2	CONTACT, WRAPOST, FEMALE, MIN
			188		9	1006774	INSULATOR, WRAPOST, FEMALE MIN
			27		8	MS171433	PIN, SPRING
			54		7	1004206	WASHER, THRUST
			27		6	1004207	DRIVE CYLINDER
			27		5	1008095	SCREW, JACK
			1		4	1008099-2	WASHER
			1		3	1008098	SCREW, SOCKET HEAD
			1		2	1001317	RETAINER, JACK SCREW
			1		1	1008525	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021225-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
−	−.02	−1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION. GMC
MILWAUKEE WISCONSIN
ACSP PN

DRAWN 1 JUN 64 DATE
CHECKED 3 JUN 64
APPROVAL 6/8/64
APPROVAL 30 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO
SIZE
1021215
SCALE 1/1
SHEET 1 OF 2

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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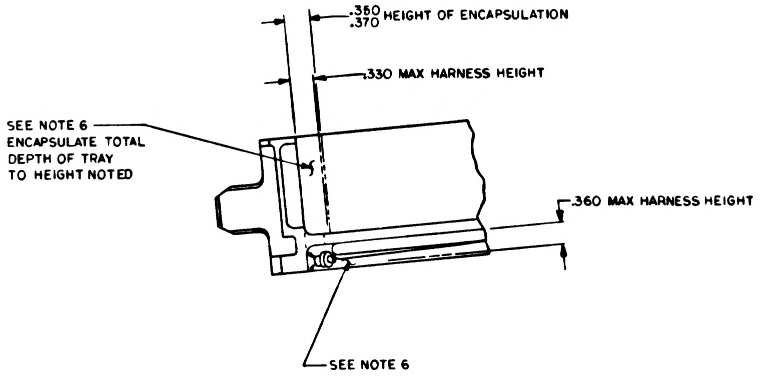
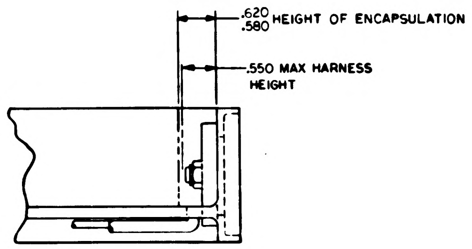
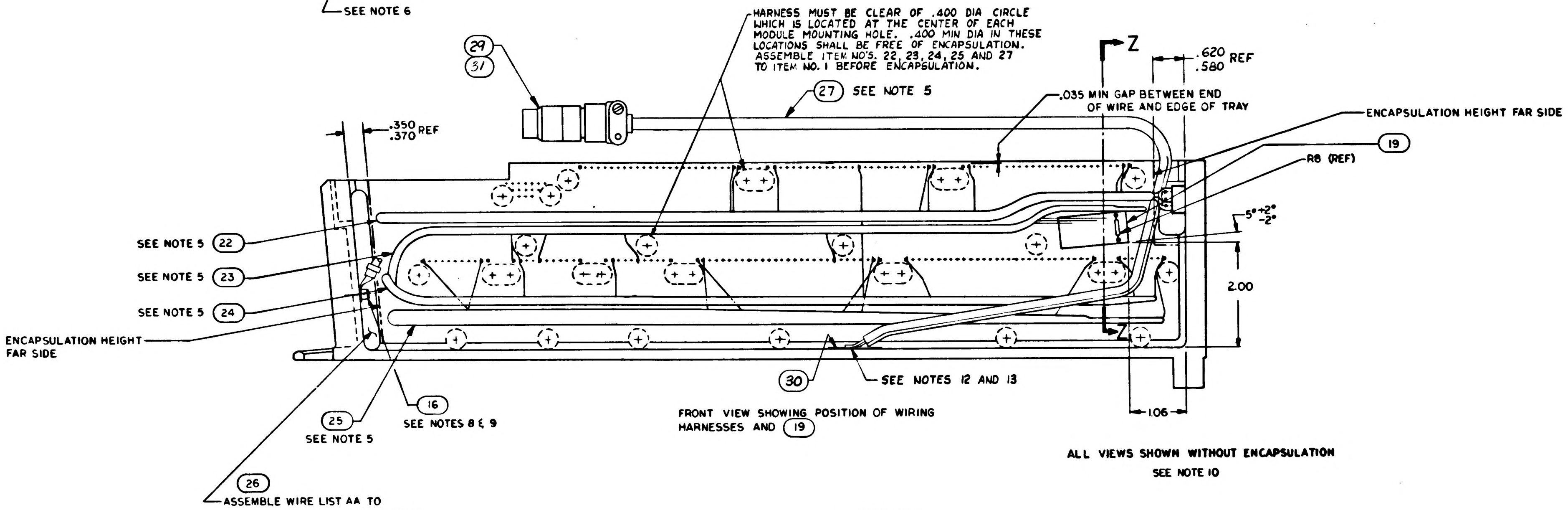
B	REVISED PER TDRR 166-3	6-F-65	


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL
DEPTH OF TRAY
TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6

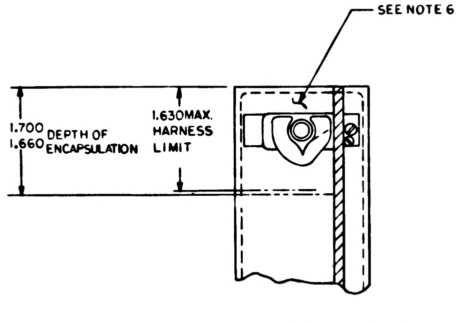

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS
HEIGHT


HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO'S. 22, 23, 24, 25 AND 27 TO ITEM NO. 1 BEFORE ENCAPSULATION.
29
31
27 SEE NOTE 5
Z
.620
.580 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
ENCAPSULATION HEIGHT FAR SIDE
19
R8 (REF)
5° +2° −2°
2.00
.350
.370 REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
ENCAPSULATION HEIGHT FAR SIDE
Z
30
SEE NOTES 12 AND 13
1.06
25
SEE NOTE 5
16
SEE NOTES 8 & 9
26

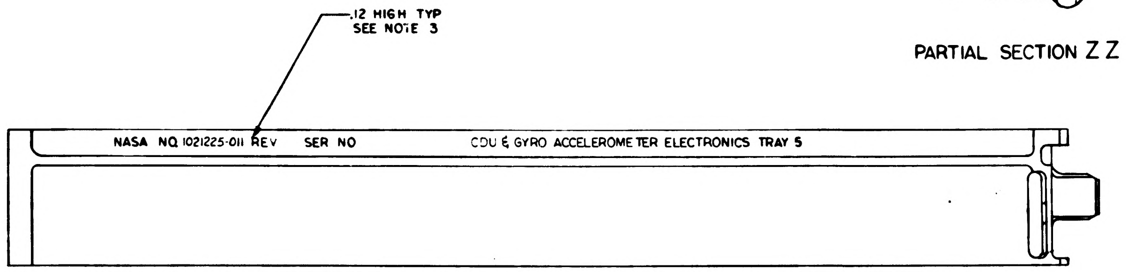
FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND (19)

ASSEMBLE WIRE LIST AA TO ITEM NO. 1 BEFORE ENCAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX. HARNESS LIMIT

PARTIAL SECTION Z Z


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021225-011 REV SER NO CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021225-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN DATE 2 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
8 JULY 64
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO
SIZE E
NASA DRAWING NO 1021215
SCALE 1/1
WT
SHEET 2 OF 2

1021215 B

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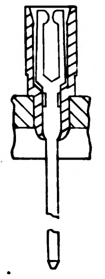
REVISIONS TDRR 1...			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	J.K.
B	REVISED PER TDRR 16643	26-FEB-65	
C	REVISED PER TDRR 16980	3 MAR 65	J J J

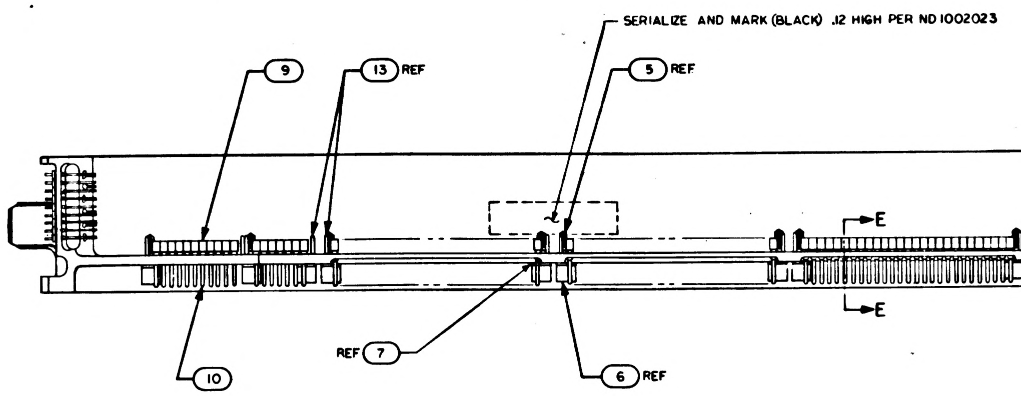
n

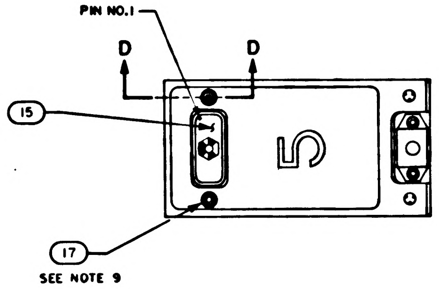
M

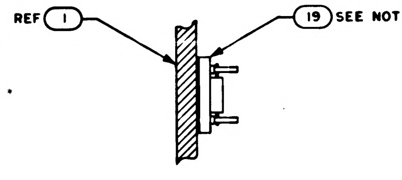
M



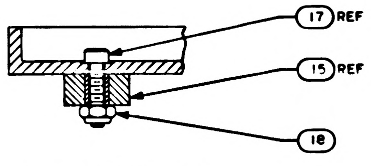
SECTION E-E



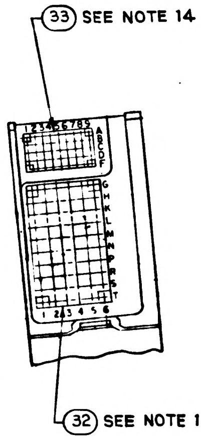


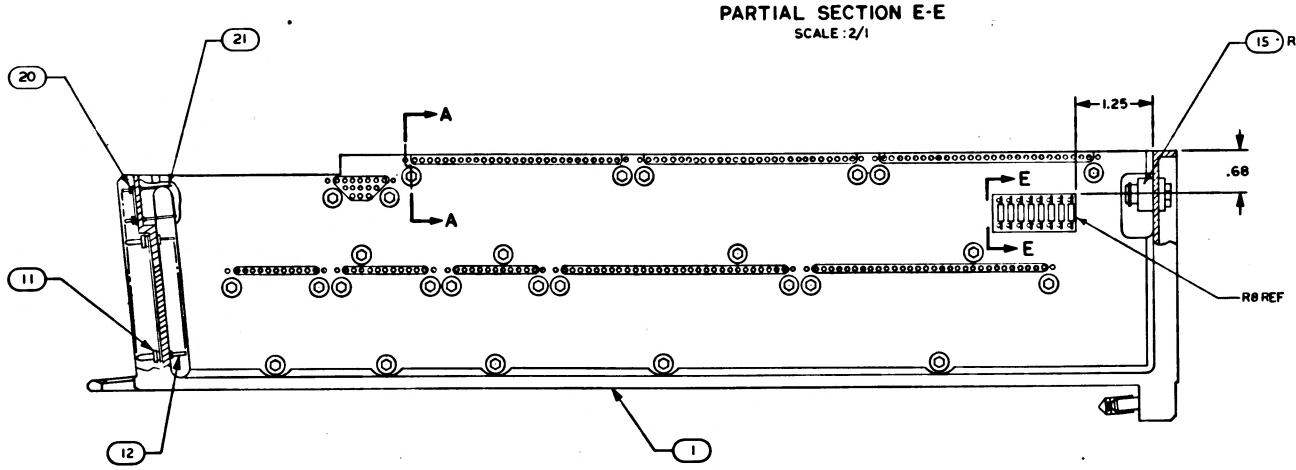


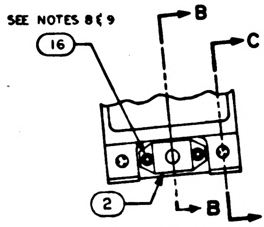
PARTIAL SECTION E-E
SCALE: 2/1

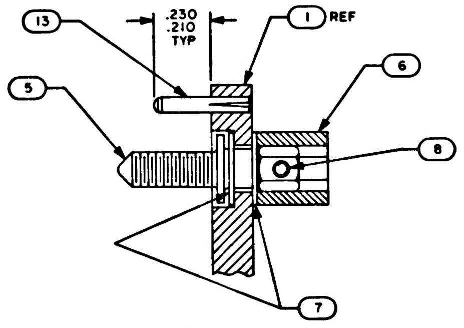


PARTIAL SECTION D-D
SCALE: 2/1

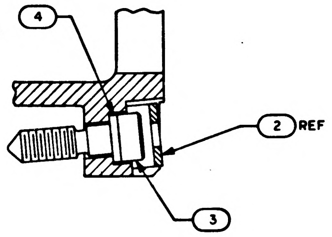




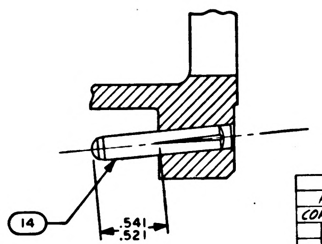




PARTIAL SECTION A-A
SCALE: 4/1



SECTION B-B
SCALE: 2/1



SECTION C-C
SCALE: 2/1

TERMINATIONS	
FROM	TO
COND E1B	45A5J12-2
E1E	45A5J12-3
E1F	45A5J12-4
E2B	45A5J12-5
E2E	45A5J12-6
E2F	45A5J12-7

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686
3. MARK PER ND1002019, WHITE
4. ASSEMBLE ITEM NUMBERS 9, 10, 11 AND 12 PER ND 1002136
5. BOND ITEM NOS. 22, 23, 24, 25, 26 AND 27 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
8. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PROCURE PER PS1007145
12. PRIOR TO INSTALLATION OF ITEM NO. 27, COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
13. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURACES OF ITEM NO. 27 WITH ND1002004, TYPE I.
14. BOND ITEM NUMBERS 32 AND 33 TO ITEM NUMBERS 11 AND 20 PER ND 1002237.

			1		33	1008553	GASKET
			1		32	1008552	GASKET
			1		31	1021204-007	CONTACT
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE, DS TYPE
			☒		28	1008454	WIRING DIAGRAM
			1		27	1021235	WIRING HARNESS E
			1		26	1015753	WIRING LIST AA
			1		25	1015752	WIRING HARNESS D
			1		24	1015751	WIRING HARNESS C
			1		23	1015750	WIRING HARNESS B
			1		22	1015749	WIRING HARNESS A
			45		21	1006782-2	CONTACT, WRAPOST MALE MIN
			45		20	1006775	INSULATOR, MALE WRAPOST MIN
			1		19	1007099	BUFFER RESISTORS ASSEMBLY
			2		18	MS21045C04	NUT, SELF-LOCKING, HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		16	MS16995-3	SCREW, CAP, SOCKET HEAD
			1		15	1010622-1	CONNECTOR, RECEPTACLE
			2		14	1010620-2	PIN, GUIDE
			18		13	1010620-1	PIN, GUIDE
			60		12	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			60		11	1010383-1	INSULATOR, WRAPOST, MALE
			188		10	1006781-2	CONTACT, WRAPOST, FEMALE, MIN
			188		9	1006774	INSULATOR, WRAPOST, FEMALE, MIN
			27		8	MS171433	PIN, SPRING
			54		7	1004206	WASHER, THRUST
			27		6	1004207	DRIVE CYLINDER
			27		5	1008095	SCREW, JACK
			1		4	1008099-2	WASHER
			1		3	1008098	SCREW, SOCKET HEAD
			1		2	1001317	RETAINER, JACK SCREW
			1		1	1008525	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021225-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
−	−.02	−1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

DRAWN 1 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/8/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 ...

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO
SIZE
1021215
SCALE 1:1
SHEET 1 OF 2

1021215 C

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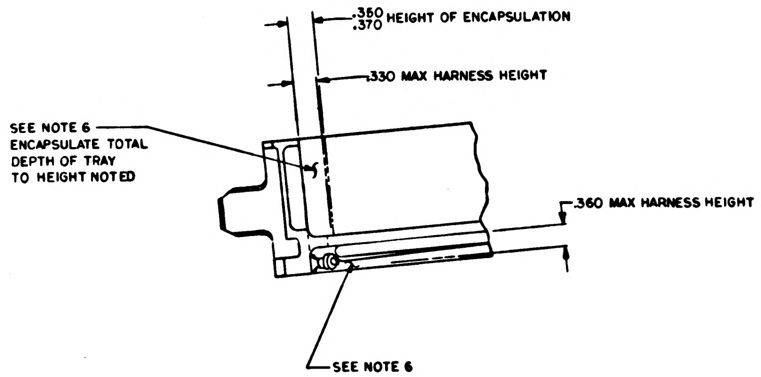
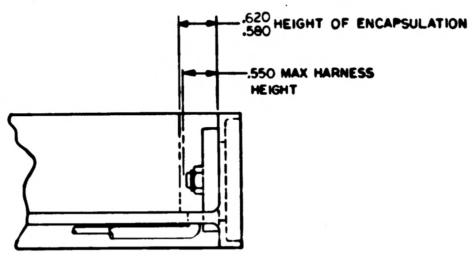
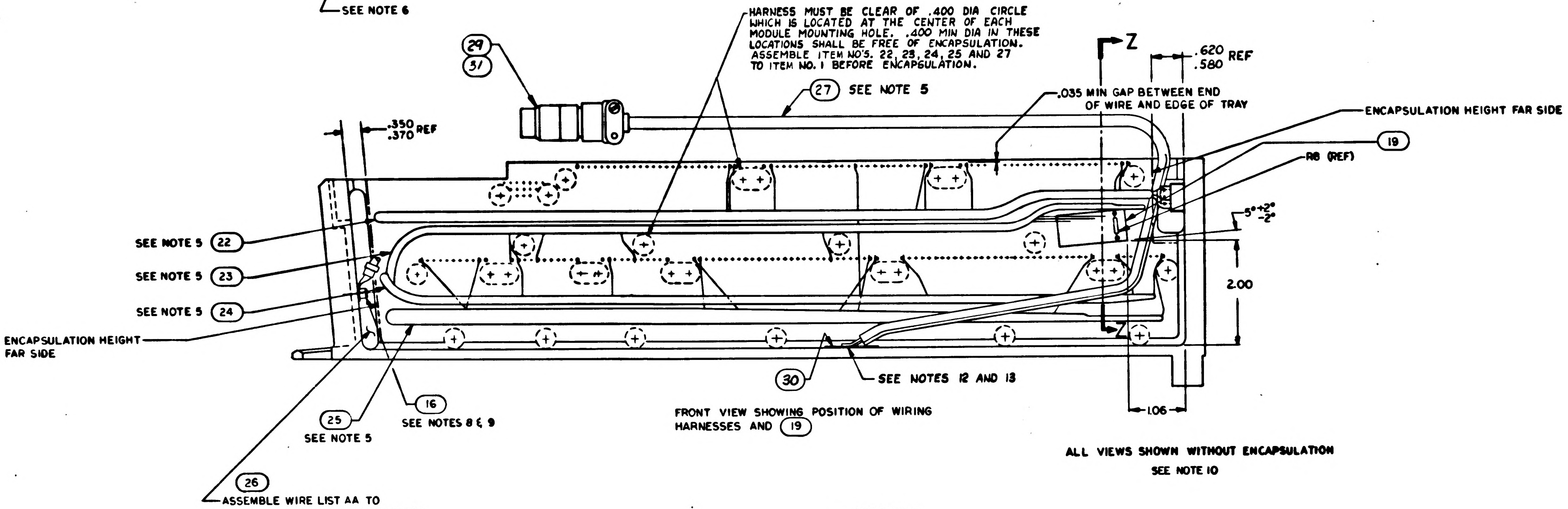
REVISIONS TDRR 10937

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14381	23 NOV 63	
B	REVISED PER TDRR 16643	26 FEB 65	
C	REVISED PER TDRR 16980	9 MAR 65	JJJ

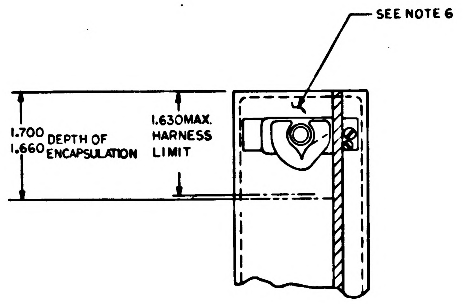

.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

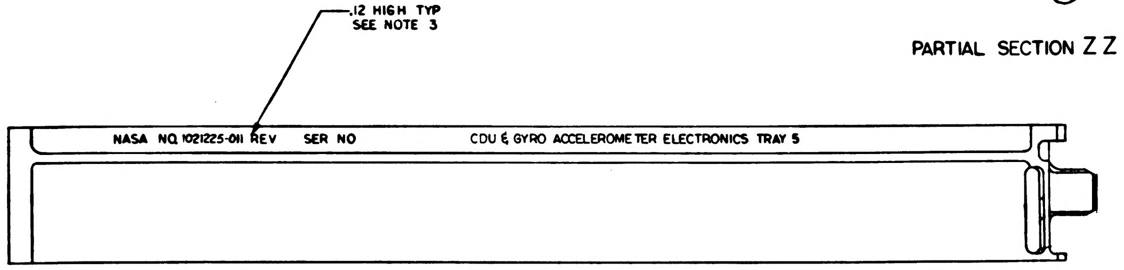

HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO'S. 22, 23, 24, 25 AND 27 TO ITEM NO. 1 BEFORE ENCAPSULATION.
29
51
27 SEE NOTE 5
Z
.620
.580 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
ENCAPSULATION HEIGHT FAR SIDE
19
R8 (REF)
5° +2° −2°
.350
.370 REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
ENCAPSULATION HEIGHT FAR SIDE
2.00
30
SEE NOTES 12 AND 13
Z
.106
25 SEE NOTE 5
16 SEE NOTES 8 & 9
26 ASSEMBLE WIRE LIST AA TO ITEM NO. 1 BEFORE ENCAPSULATION

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND (19)

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX. HARNESS LIMIT

PARTIAL SECTION ZZ


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021225-011 REV SER NO
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021225-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN DATE 2 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 Jun 64
8 JULY 64
NASA APPROVAL 11/7/64
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

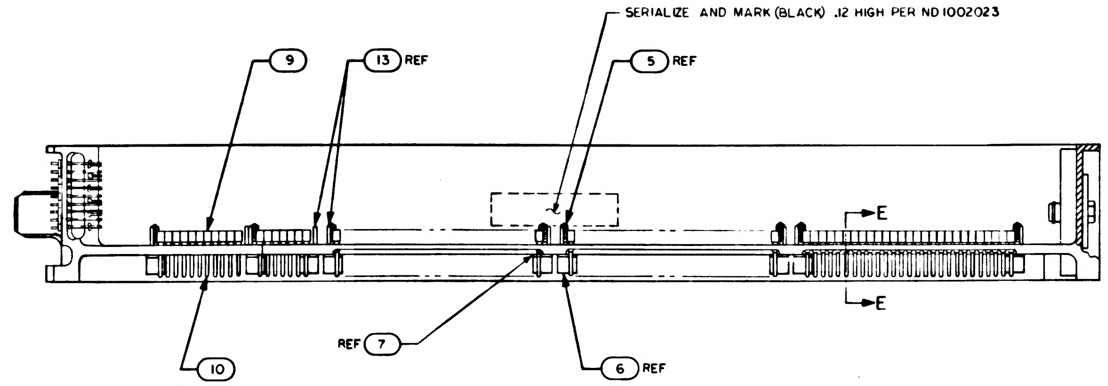
FRAME ASSEMBLY
TRAY 5

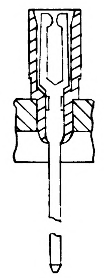
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021215
SCALE 1/1
WT
SHEET 2 OF 2

1021215 C

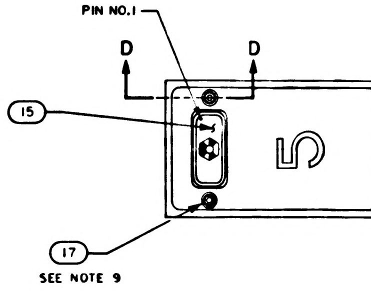
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

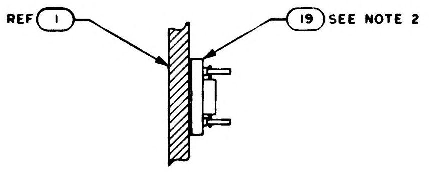
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 4321	23 NOV 64	
B	REVISED PER TDRR 6643	26-FEB-65	
C	REVISED PER TDRR 6980	3 MAR 65	
D	REVISED PER TDRR 20118	21 JUN 65	



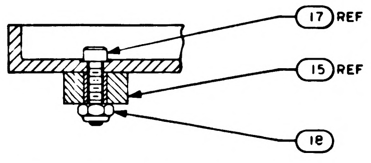


SECTION E-E

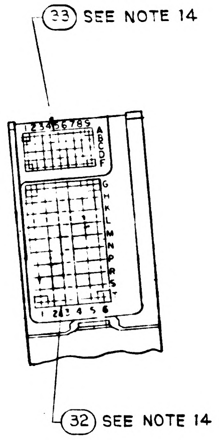


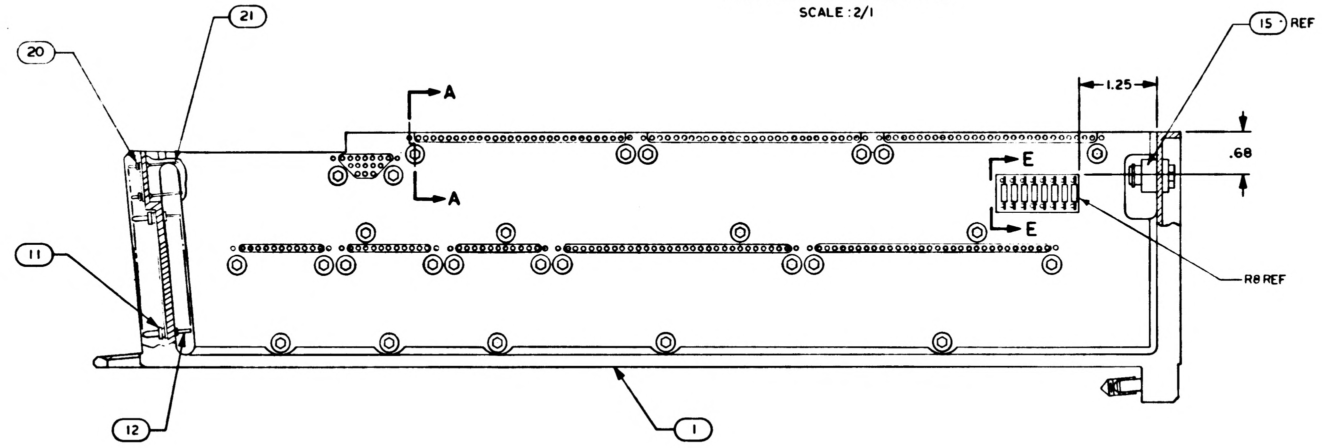


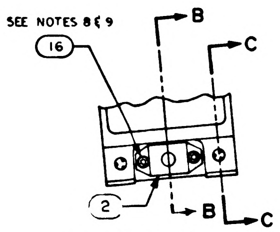
PARTIAL SECTION E-E
SCALE: 2/1

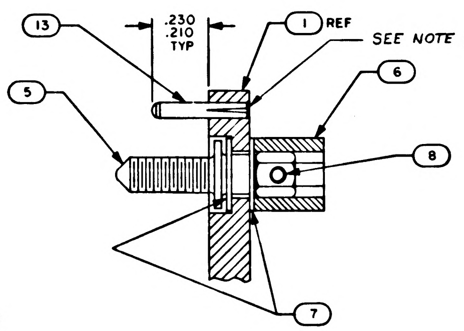


PARTIAL SECTION D-D
SCALE: 2/1

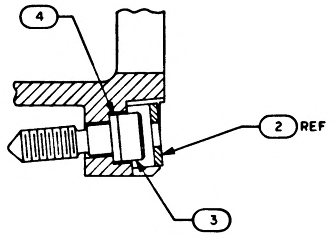




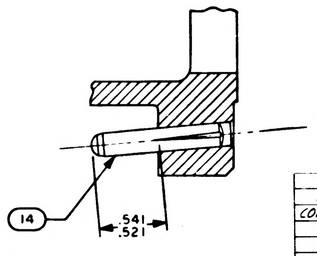




PARTIAL SECTION A-A
SCALE: 4/1



SECTION B-B
SCALE: 2/1



SECTION C-C
SCALE: 2/1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEM NO. 19 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
3. MARK PER ND1002019, WHITE.
4. ASSEMBLE ITEM NUMBERS 9,10,11 AND 12 PER ND 1002136.
5. BOND ITEM NOS. 22,23,24,25,26 AND 27 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
8. COAT THREADS OF ITEM NO 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PROCURE PER PS1007145.
12. PRIOR TO INSTALLATION OF ITEM NO. 27, COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
13. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURACES OF ITEM NO. 27 WITH ND1002004, TYPE I.
14. BOND ITEM NUMBERS 32 AND 33 TO ITEM NUMBERS 11 AND 20 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND1002004, POTTING SIDE ONLY.
16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE I.

TERMINATIONS	
FROM	TO
COND E1B	45A5J12-2
E1E	45A5J12-3
E1F	45A5J12-4
E2B	45A5J12-5
E2E	45A5J12-6
E2F	45A5J12-7

LIST OF PARTS AND MATERIALS

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		33	1008553	GASKET
			1		32	1008552	GASKET
			1		31	1021204-007	CONTACT
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE, DS TYPE
			X		28	1008454	WIRING DIAGRAM
			1		27	1021235	WIRING HARNESS E
			1		26	1015753	WIRING LIST AA
			1		25	1015752	WIRING HARNESS D
			1		24	1015751	WIRING HARNESS C
			1		23	1015750	WIRING HARNESS B
			1		22	1015749	WIRING HARNESS A
			45		21	1006782-2	CONTACT, WRAPOST MALE MIN
			45		20	1006775	INSULATOR, MALE WRAPOST MIN
			1		19	1007099	BUFFER RESISTORS ASSEMBLY
			2		18	MS21045C04	NUT, SELF-LOCKING, HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HE[illegible]
			2		16	MS16995-3	SCREW, CAP, SOCKET HE[illegible]D
			1		15	1010622-1	CONNECTOR, RECEPTACL[illegible]
			2		14	1010620-2	PIN, GUIDE
			18		13	MS16556-604	PIN, GUIDE
			60		12	1010382-1	CONTACT. BLADE EDGE C[illegible]ECTOR
			60		11	1010383-1	INSULATOR, WRAPOST [illegible]ALE
			188		10	1006781-2	CONTACT. WRAPOST, FE[illegible] MIN
			188		9	1006774	INSULATOR, WRAPOST [illegible]LE, MIN
			27		8	MS171433	PIN, SPRING
			54		7	1004206	WASHER, THRUST
			27		6	1004207	DRIVE CYLINDER
			27		5	1008095	SCREW, JACK
			1		4	1008099-2	WASHER
			1		3	1008098	SCREW, SOCKET [illegible]
			1		2	1001317	RETAINER, JA[illegible] SCREW
			1		1	1008525	FRAME

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021225-011	1021207-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
−	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN 1 JUN 64 DATE
CHECKED
APPROVAL 6/8/64
APPROVAL 3 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO 80230
SIZE
1021215
SCALE 1:1
SHEET 1 OF 2

1021215 D

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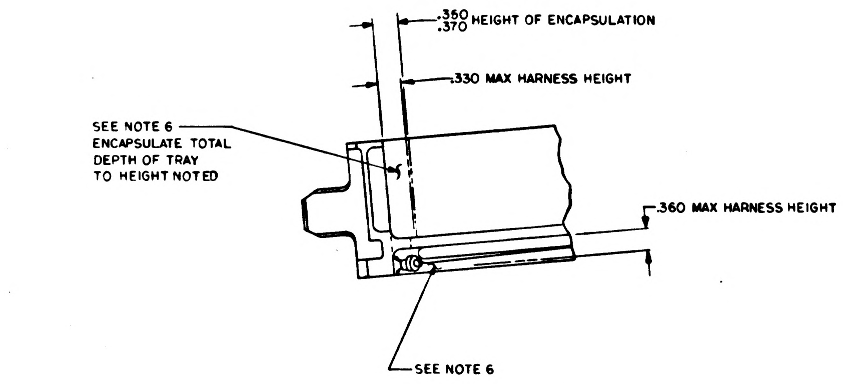
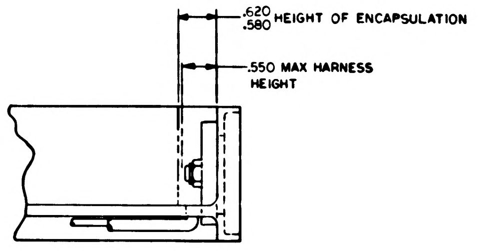
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 [illegible]	[illegible]
B	REVISED PER TDRR 60-3	6-FEB-65	[illegible]
C	REVISED PER TDRR 16980	MAR 65	[illegible]
D	REVISION STATUS CHANGED	2 JUL 6	[illegible]


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL
DEPTH OF TRAY
TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6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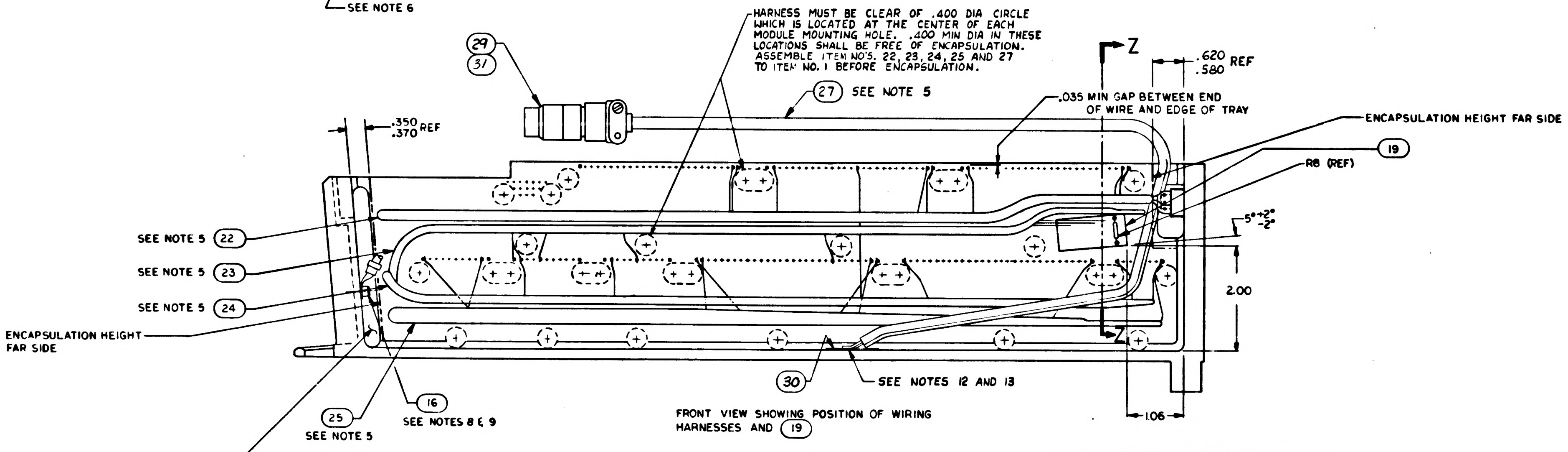
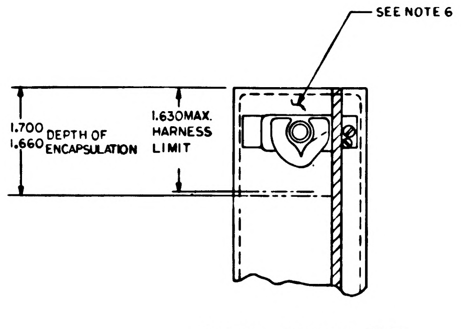
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS
HEIGHT


HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO'S. 22, 23, 24, 25 AND 27 TO ITEM NO. 1 BEFORE ENCAPSULATION.
29
31
27 SEE NOTE 5
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
19
R8 (REF)
5° +2° −2°
2.00
.350
.370 REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
ENCAPSULATION HEIGHT FAR SIDE
Z
30
SEE NOTES 12 AND 13
1.06
25
SEE NOTE 5
16
SEE NOTES 8 & 9

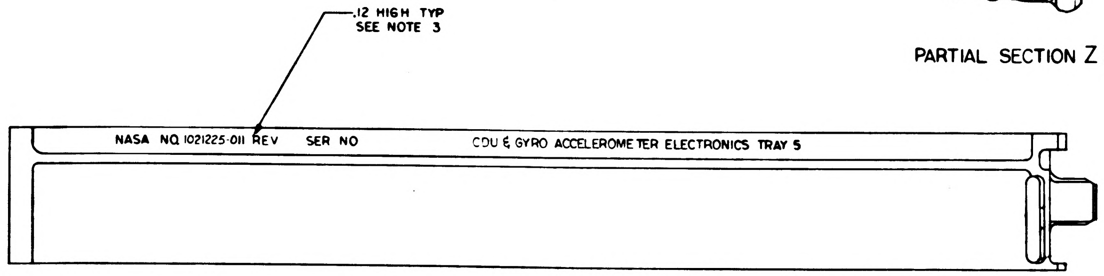
FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND (19)

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10

(26) ASSEMBLE WIRE LIST AA TO ITEM NO. 1 BEFORE ENCAPSULATION


SEE NOTE 6
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX. HARNESS LIMIT

PARTIAL SECTION Z Z


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021225-011 REV SER NO CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

NEXT ASSY	USED ON
1021225-011	1021207-011
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
Cambridge Mass
Contract NAS 9-497
DRAWN DATE 2 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL A. Mitchell 8 JUN 66
8 JULY 67
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

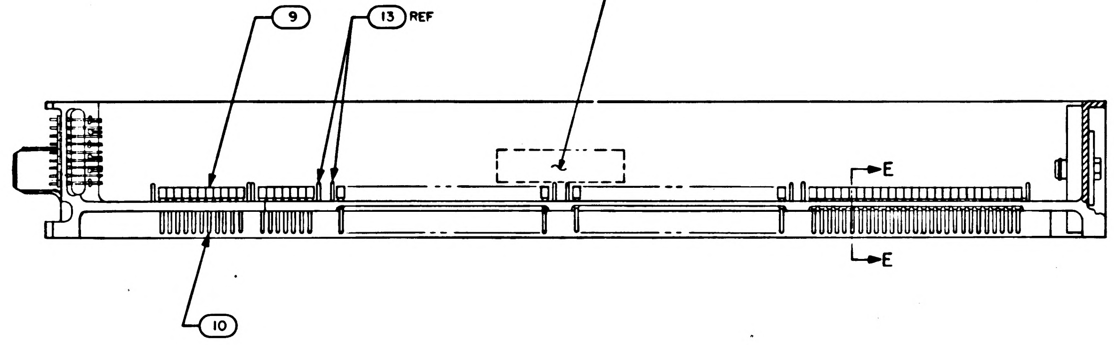
CODE IDENT NO.	SIZE	NASA DRAWING NO
80230	E	1021215

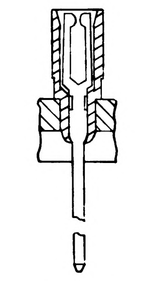
SCALE 1/1 WT SHEET 2 OF 2

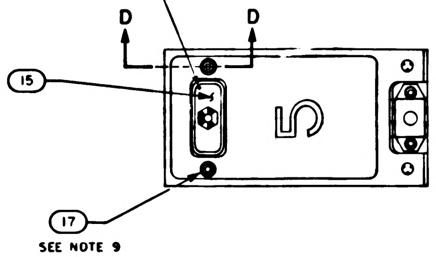
1021215 D

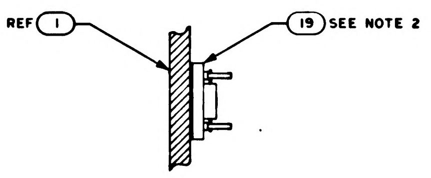
NOTICE. WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	
B	REVISED PER TDRR 16643	26-FEB-65	
C	REVISED PER TDRR 16980	3 MAR 65	JJ
D	REVISED PER TDRR 20.18	21 JUN 65	
E	REVISED PER TDRR 20787	21 JUL 65	RuH

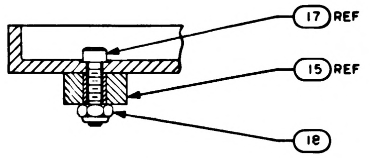



SECTION E-E

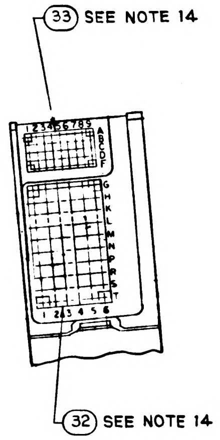


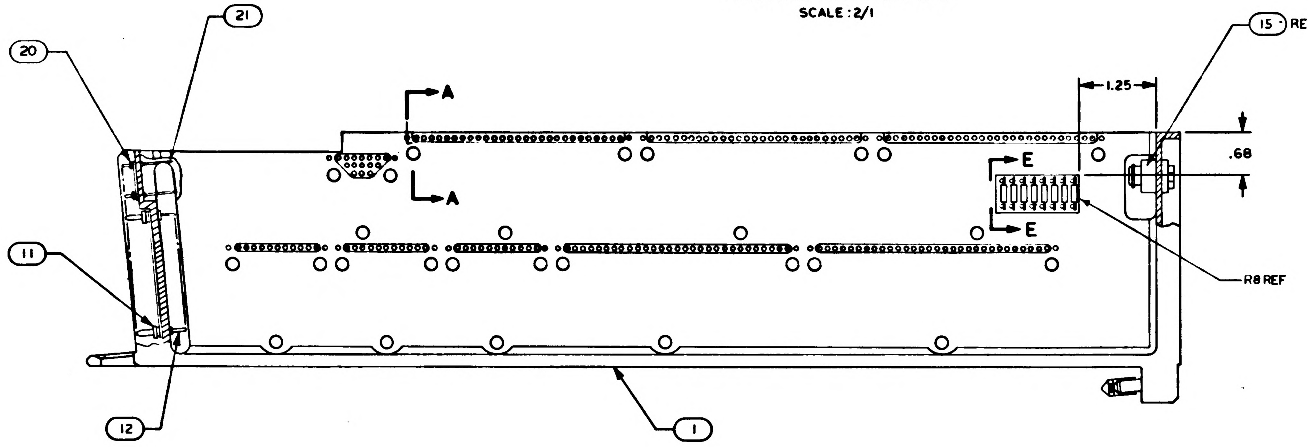


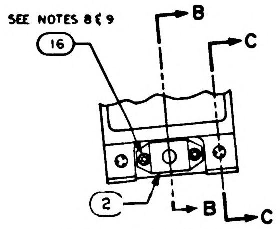
PARTIAL SECTION E-E
SCALE: 2/1

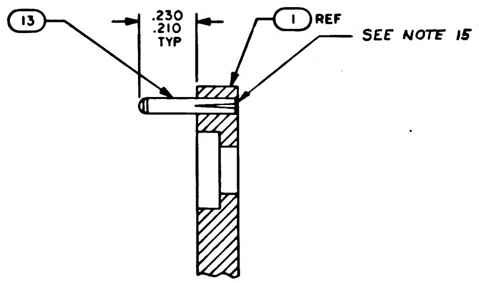


PARTIAL SECTION D-D
SCALE: 2/1









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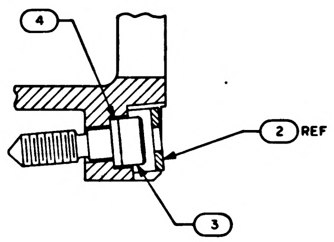
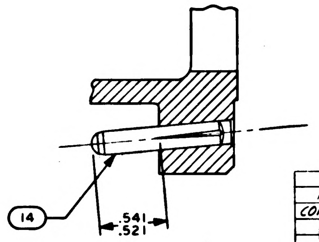
SCALE: 4/1



SECTION B-B
SCALE: 2/1



SECTION C-C
SCALE: 2/1

TERMINATIONS	
FROM	TO
COND E1B	45A5J12-2
E1E	45A5J12-3
E1F	45A5J12-4
E2B	45A5J12-5
E2E	45A5J12-6
E2F	45A5J12-7

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEM NO. 19 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686.
3. MARK PER ND1002019, WHITE.
4. ASSEMBLE ITEM NUMBERS 9,10,11 AND 12 PER ND 1002136.
5. BOND ITEM NOS. 22,23,24,25,26 AND 27 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
8. COAT THREADS OF ITEM NO 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PROCURE PER PS1007145.
12. PRIOR TO INSTALLATION OF ITEM NO. 27, COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
13. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURACES OF ITEM NO. 27 WITH ND1002004, TYPE I.
14. BOND ITEM NUMBERS 32 AND 33 TO ITEM NUMBERS 11 AND 20 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND1002004, POTTING SIDE ONLY.
16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE I.

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1		33	1008553	GASKET
1		32	1008552	GASKET
1		31	1021204-007	CONTACT
AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
1		29	1021205-001	RECEPTACLE, DS TYPE
☒		28	1008454	WIRING DIAGRAM
1		27	1021235	WIRING HARNESS E
1		26	1015753	WIRING LIST AA
1		25	1015752	WIRING HARNESS D
1		24	1015751	WIRING HARNESS C
1		23	1015750	WIRING HARNESS B
1		22	1015749	WIRING HARNESS A
45		21	1006782-2	CONTACT, WRAPOST MALE MIN
45		20	1006775	INSULATOR, MALE WRAPOST MIN
1		19	1007099	BUFFER RESISTORS ASSEMBLY
2		18	MS21045C04	NUT, SELF-LOCKING, HEX
2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
2		16	MS16995-3	SCREW, CAP, SOCKET HEAD
1		15	1010622-1	CONNECTOR, RECEPTACLE
2		14	1010620-2	PIN, GUIDE
18		13	MS16556-604	PIN, GUIDE
60		12	1010382-1	CONTACT, BLADE EDGE CONNECTOR
60		11	1010383-1	INSULATOR, WRAPOST [illegible]ALE
188		10	1006781-2	CONTACT, WRAPOST, FE[illegible], MIN
188		9	1006774	INSULATOR, WRAPOST [illegible]E, MIN
~~27~~		~~8~~	~~MS171433~~	~~PIN, SPRING~~
~~64~~		~~7~~	~~1004206~~	~~WASHER, THRUST~~
~~27~~		~~6~~	~~1004207~~	~~DRIVE CYLINDER~~
~~27~~		~~5~~	~~1008095~~	~~SCREW, JACK~~
1		4	1008099-2	WASHER
1		3	1008098	SCREW, SOCKET HEAD
1		2	1001317	RETAINER, JACK SCREW
1		1	1008525	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021225-011	1021207-011	

APPLICATION
THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + −
DECIMALS +.02 −.02
ANGLES +1° −1°
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN 1 JUN 64
CHECKED 3 JUN 64
APPROVAL 6/8/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO 80230
SIZE
1021215
SCALE 1:1
SHEET 1 OF 2

1021215 E

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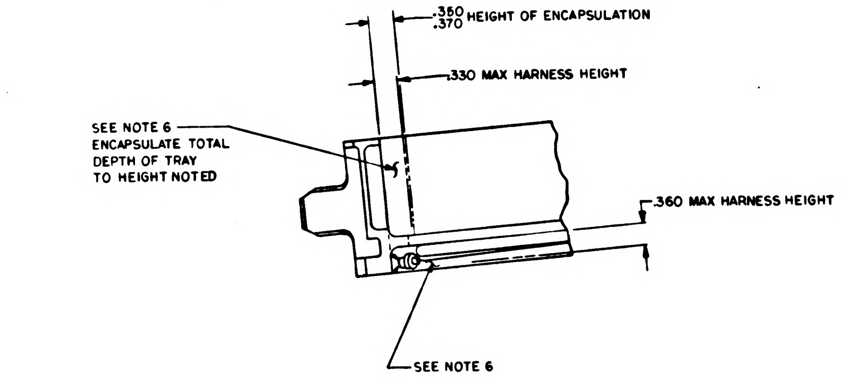
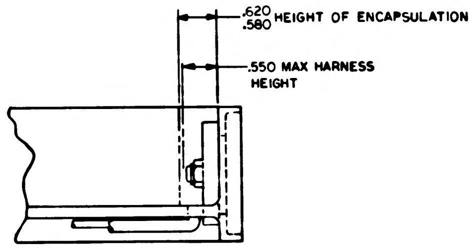
REVISIONS

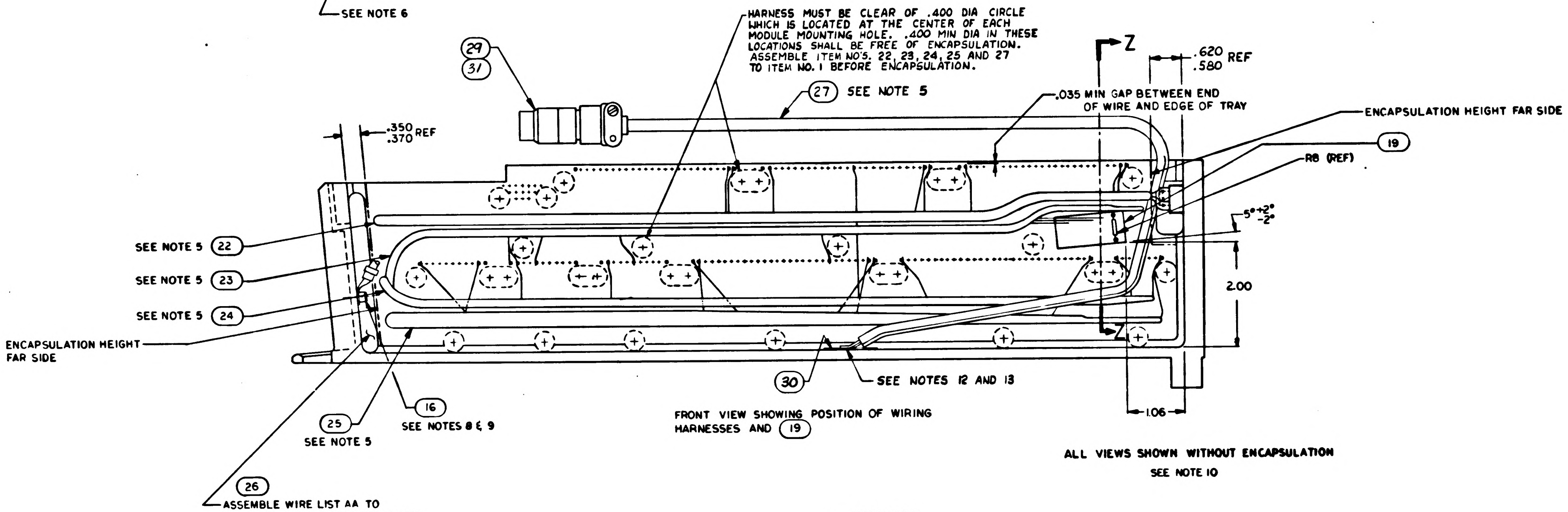
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	[illegible]
B	REVISED PER TDRR 16043	6-FEB 65	J.J.
C	REVISED PER TDRR 16980	MAR 65	J.J.J.
D	REVISION STATUS CHANGED	[illegible]	[illegible]
E	REVISION STATUS CHANGED	[illegible]	[illegible]



.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL
DEPTH OF TRAY
TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6



.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS
HEIGHT



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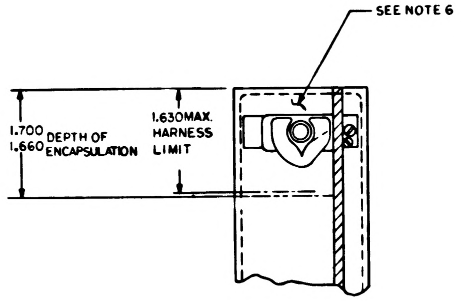
29
31
27 SEE NOTE 5
Z
.620
.580 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
ENCAPSULATION HEIGHT FAR SIDE
19
R8 (REF)
5° +2° -2°
.350
.370 REF
2.00
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
ENCAPSULATION HEIGHT FAR SIDE
30
SEE NOTES 12 AND 13
.106
25
SEE NOTE 5
16
SEE NOTES 8 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO. 1 BEFORE ENCAPSULATION

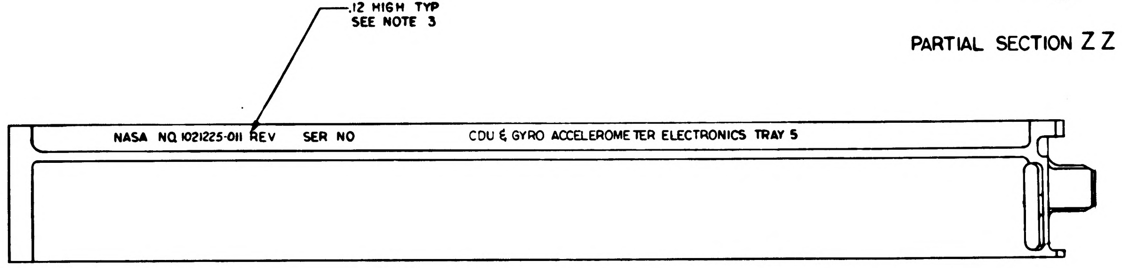
FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND (19)

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10



SEE NOTE 6
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX. HARNESS LIMIT

PARTIAL SECTION Z Z



.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021225-011 REV SER NO
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1021225-011	1021207-011
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO Contract NAS 9-497
DRAWN DATE 2 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
8 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 5

CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO 1021215
SCALE 1/1
WT
SHEET 2 OF 2

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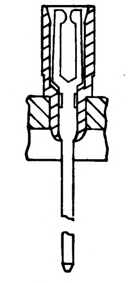
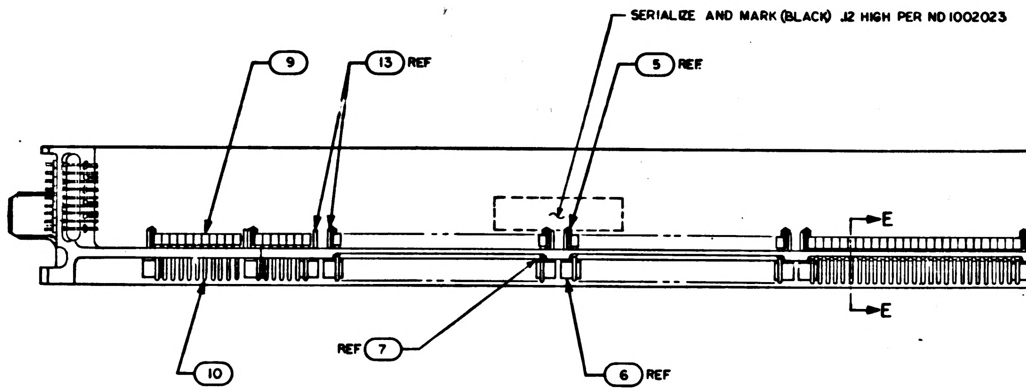
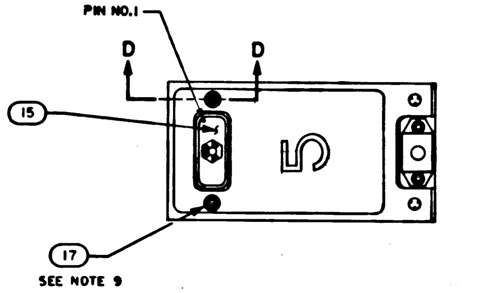
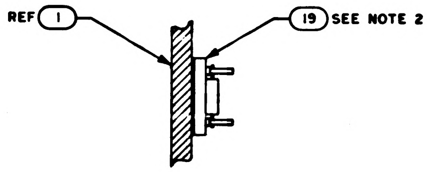
REVISIONS 70R2 10907			
SYM	DESCRIPTION	DATE	APPROVAL



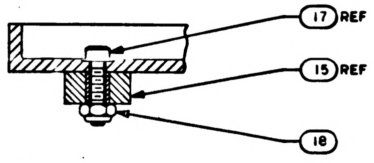
SECTION E-E



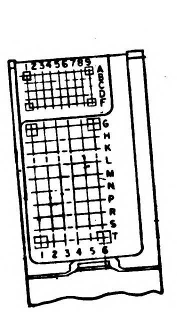


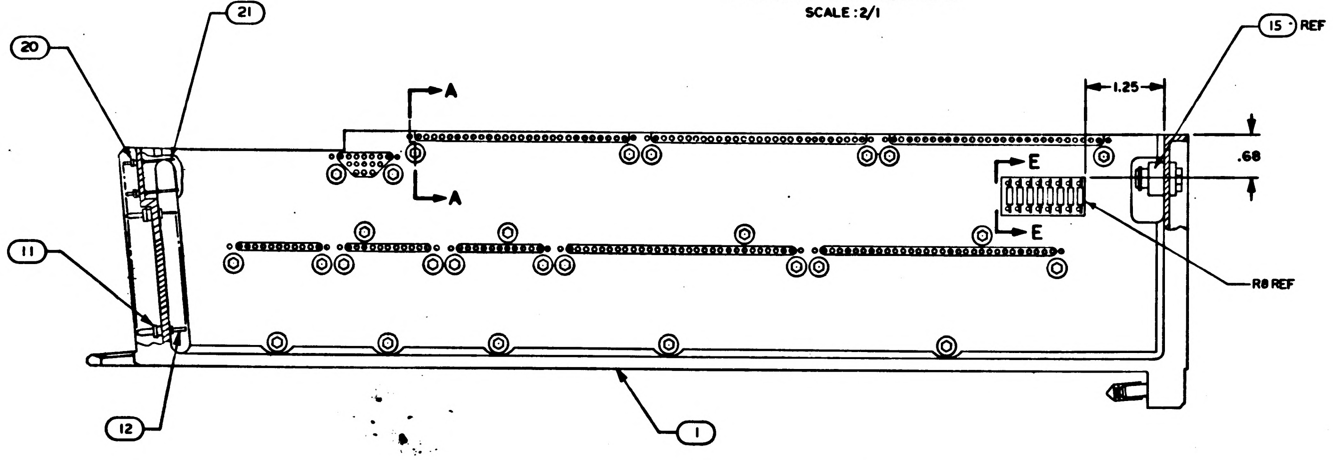


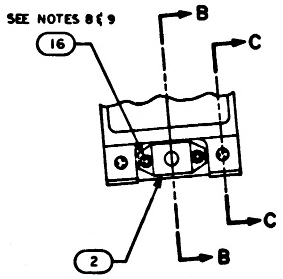
PARTIAL SECTION E-E
SCALE: 2/1

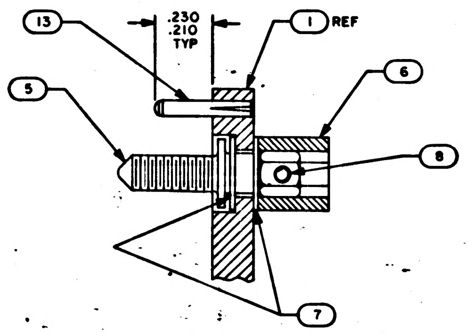


PARTIAL SECTION D-D
SCALE: 2/1









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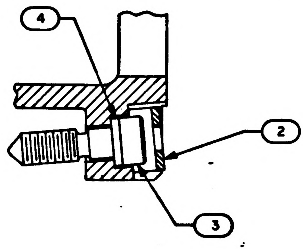
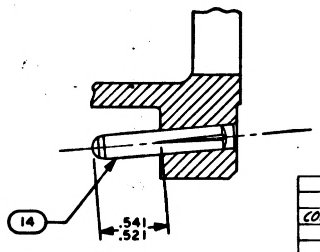
SCALE: 4/1



SECTION B-B
SCALE: 2/1



SECTION C-C
SCALE: 2/1

TERMINATIONS	
FROM	TO
COND E1B	45A5J12-2
E1E	45A5J12-3
E1F	45A5J12-4
E2B	45A5J12-5
E2E	45A5J12-6
E2F	45A5J12-7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND 1002004 USING FLEXIBLE FORMULATION OF NASA DRAWING 1010657 AND NASA DRAWING 1010686
3. MARK PER ND1002019, WHITE
4. ASSEMBLE ITEM NUMBERS 9, 10, 11 AND 12 PER ND 1002136
5. BOND ITEM NOS. 22, 23, 24, 25, 26 AND 27 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
8. COAT THREADS OF ITEM NO. 16 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585. (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 & 17 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. ~~PROCURE PER PS1007145.~~
12. PRIOR TO INSTALLATION OF ITEM NO. 27, COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
13. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND1002004, TYPE 1.

			1		31	1021204-007	CONTACT
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE, DS TYPE
			X		28	1010095	WIRING DIAGRAM
			1		27	1021235	WIRING HARNESS E
			1		26	1015753	WIRING LIST AA
			1		25	1015752	WIRING HARNESS D
			1		24	1015751	WIRING HARNESS C
			1		23	1015750	WIRING HARNESS B
			1		22	1015749	WIRING HARNESS A
			45		21	1006782-2	CONTACT, WRAPOST MALE MIN
			46		20	1006776	INSULATOR, MALE WRAPOST MIN
			1		19	1007099	BUFFER RESISTORS ASSEMBLY
			2		18	MS21045C04	NUT, SELF-LOCKING, HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		16	MS16995-3	SCREW, CAP, SOCKET HEAD
			1		15	1010622-1	CONNECTOR, RECEPTACLE
			2		14	1010620-2	PIN, GUIDE
			18		13	1010620-1	PIN, GUIDE
			60		12	1010382-1	CONTACT. BLADE FACE CONNECTOR
			60		11	1010383-1	INSULATOR, WRAPOST, MALE
			188		10	1006781-2	CONTACT WRAPOST, FEMALE, MIN
			188		9	1006774	INSULATOR, WRAPOST, FEMALE, MIN
			27		8	MS171433	PIN, SPRING
			54		7	1004206	WASHER, THRUST
			27		6	1004207	DRIVE CYLINDER
			27		5	1008095	SCREW, JACK
			1		4	1008099-2	WASHER
			1		3	1008098	SCREW, SOCKET HEAD
			1		2	1001317	RETAINER, JACK SCREW
			1		1	1008175	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021225-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
−	−.02	−1°

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

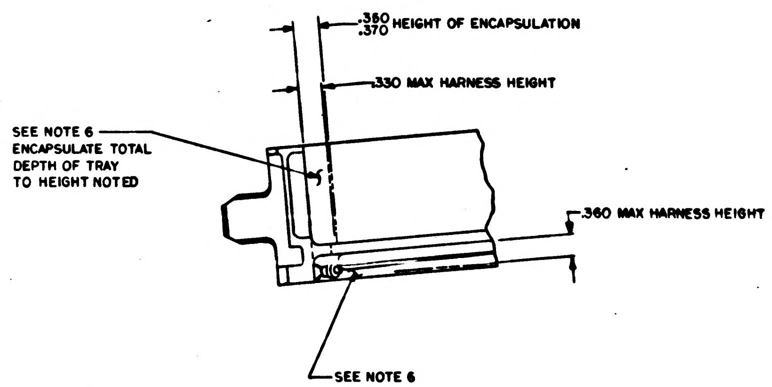
DRAWN 1 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL R Dahng 6/8/64
APPROVAL 8 Jun 64
NASA APPROVAL
MIT APPROVAL 14 Jul 64

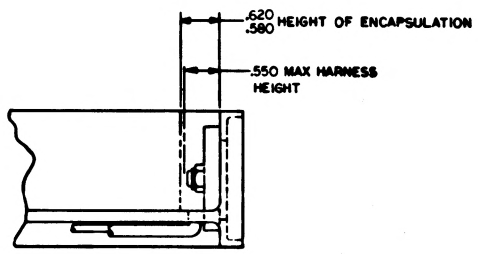
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

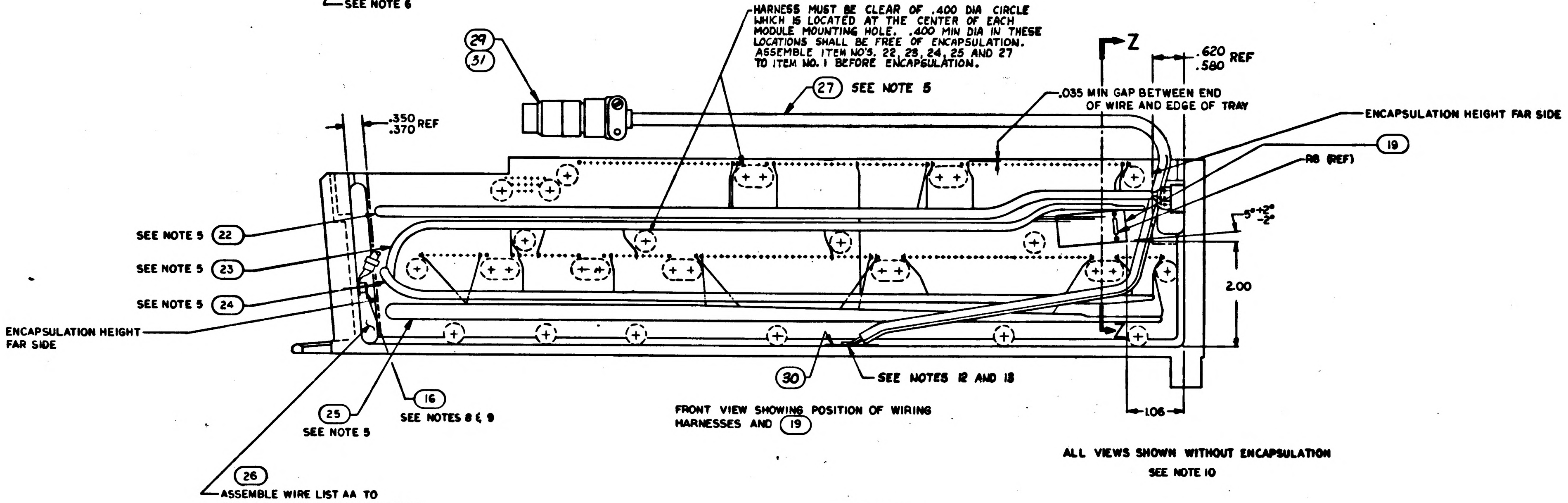
FRAME ASSEMBLY
TRAY 6

CODE IDENT NO.
SIZE
1021215
SCALE 1:1
SHEET 1 OF 2

MASTER

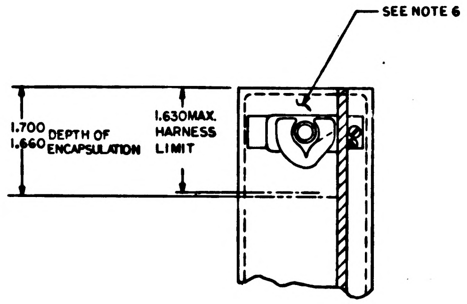

.380
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

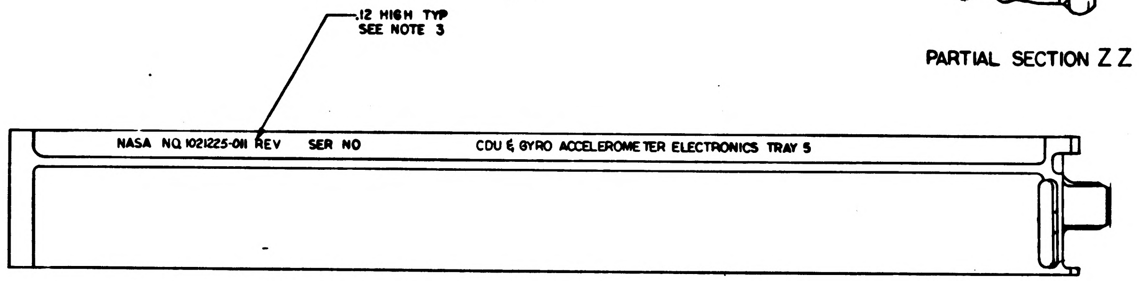

HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO'S. 22, 23, 24, 25 AND 27 TO ITEM NO. 1 BEFORE ENCAPSULATION.
29
31
27 SEE NOTE 5
Z
.620
.580 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
ENCAPSULATION HEIGHT FAR SIDE
19
R8 (REF)
5° +2° −2°
.350
.370 REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
ENCAPSULATION HEIGHT FAR SIDE
2.00
Z
30
SEE NOTES 12 AND 13
1.06
25
SEE NOTE 5
16
SEE NOTES 8 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO. 1 BEFORE ENCAPSULATION

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND (19)

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660 DEPTH OF ENCAPSULATION
1.630 MAX. HARNESS LIMIT

PARTIAL SECTION ZZ


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021225-011 REV SER NO
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5

MARKING VIEW AFTER ENCAPSULATION

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

1021226-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
Cambridge, Mass.
Contract NAS 9-497
DRAWN 2 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/15/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL

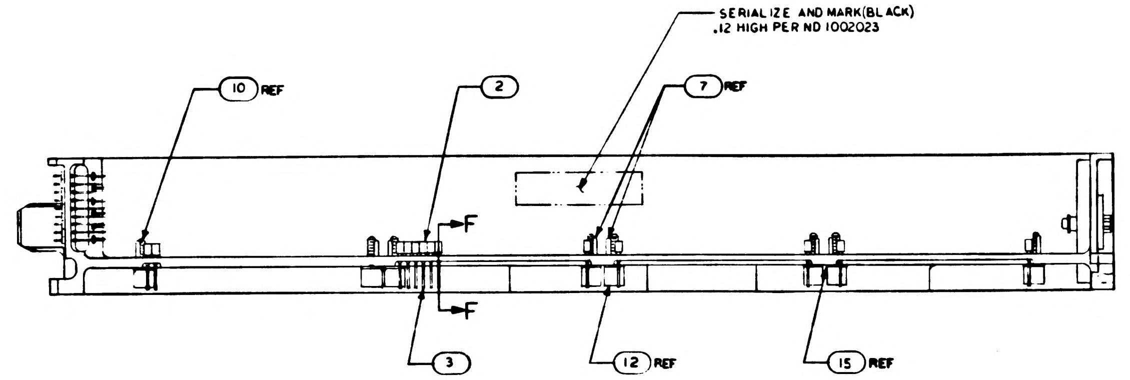
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

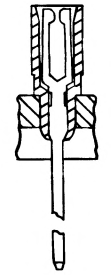
FRAME ASSEMBLY
TRAY 5

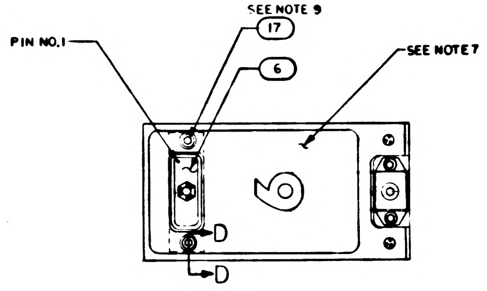
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021215
SCALE 1/1
WT
SHEET 2 OF 2

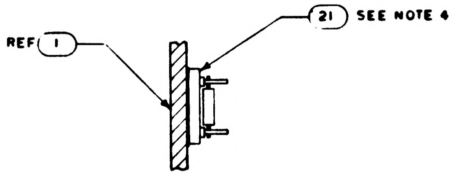
NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	[illegible]	

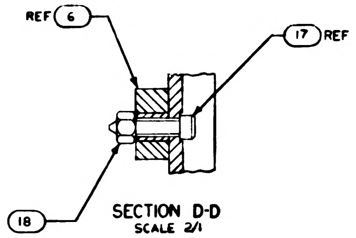



SECTION F-F
151 PLACES

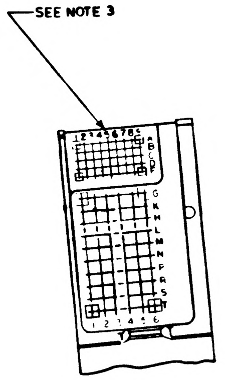


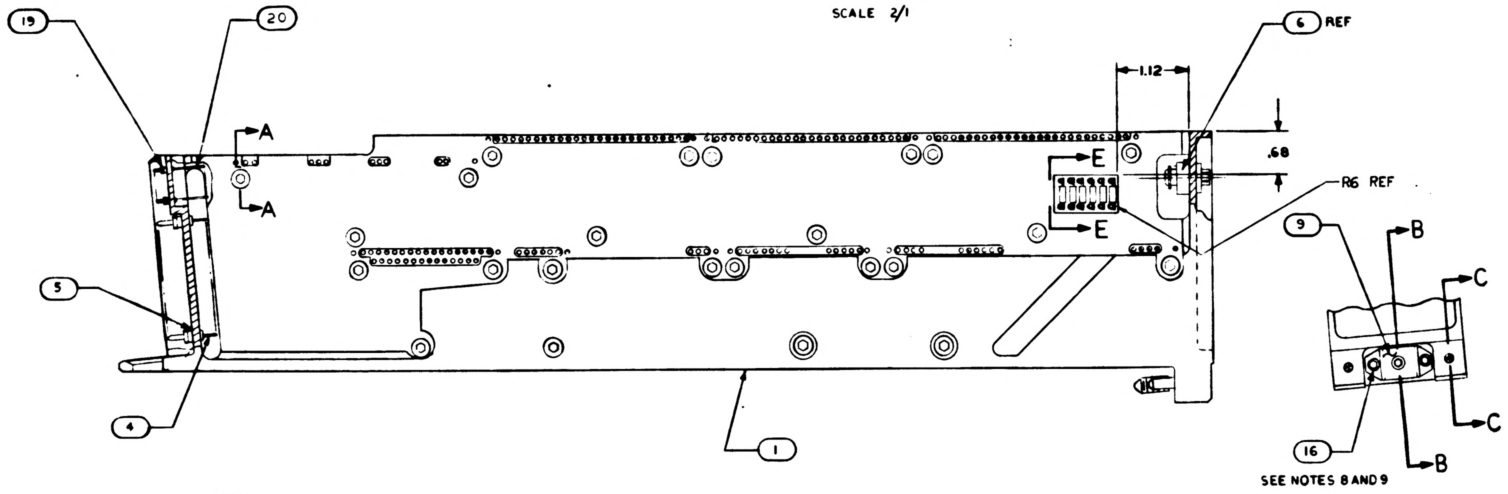


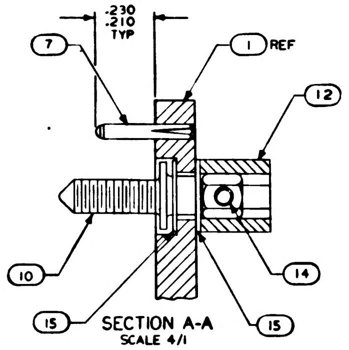
PARTIAL SECTION E-E
SCALE 2/1



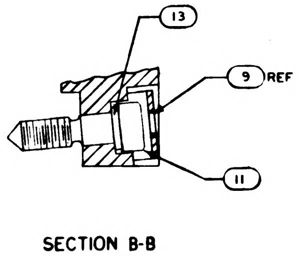
SECTION D-D
SCALE 2/1



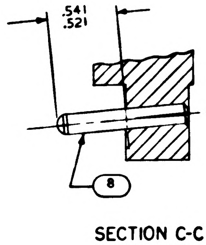




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND E1B	45A6J10-7
E1E	45A6J10-8
E1F	45A6J10-9
E2B	45A6J10-11
E2E	45A6J10-12
E2F	45A6J10-4
E3B	45A6J10-2
E3E	45A6J10-3
E3F	45A6J10-10
E4B	45A6J10-1
E4E	45A6J10-5
E4F	45A6J10-6

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,19 AND 20 PER ND 1002136
3. MARK PER ND 1002019 WHITE
4. BOND ITEM NO.21 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION PER NASA DRAWING 1010657 AND NASA DRAWING 1010686
5. BOND ITEM NOS 22,23,24,25,26 & 28 TO ITEM NO.1 PER ND1002004 AS NECESSARY
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
8. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 IN LB.
10. PROCURE PER PS1007146.
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PRIOR TO INSTALLATION OF ITEM NO. 28 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
12. AFTER INSTALLATION OF ITEM NO. 28 COVER UNINSULATED SURFACES OF ITEM NO. 28 WITH ND1002004, TYPE I.
13. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, . 3 WIDE
			1		29	1021205-006	RECEPTACLE, DS TYPE
			1		28	1021236	WIRING HARNESS E
			X		27	1008455	WIRING DIAGRAM
			1		26	1015768	WIRE LIST AA
			1		25	1015767	WIRING HARNESS D
			1		24	1015766	WIRING HARNESS C
			1		23	1015765	WIRING HARNESS B
			1		22	1015764	WIRING HARNESS A
			1		21	1007110	BUFFER RESISTORS ASSEMBLY
			45		20	1006782-2	CONTACT, WRAPOST, MALE MIN
			45		19	1006775	INSULATOR, WRAPOST, MALE MIN
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			50		15	1004206	WASHER, THRUST
			25		14	MS171433	PIN, SPRING
			1		13	1008099-2	WASHER
			25		12	1004207	DRIVE CYLINDER
			1		11	1008098	SCREW, SOCKET HEAD
			25		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			16		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			60		5	1010383-1	INSULATOR, WRAPOST MAL
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			151		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			151		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1021206	FRAME

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO
1021226-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS +.02 −.02 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN 3 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL 6/12/64
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBLY
TRAY 6

CODE IDENT NO
SIZE E
1021216
SCALE 1:1
SHEET 1 OF 2

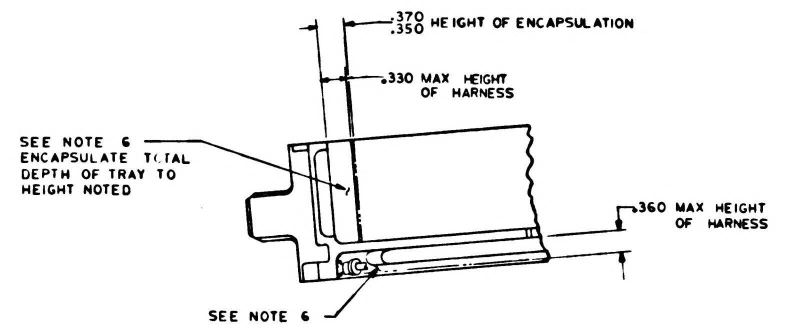
1021216 A

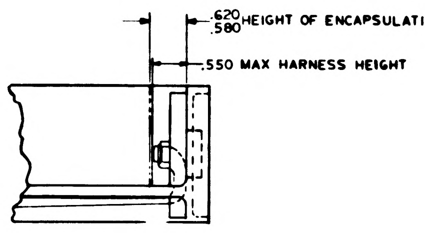
NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE [illegible] THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT [illegible] OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

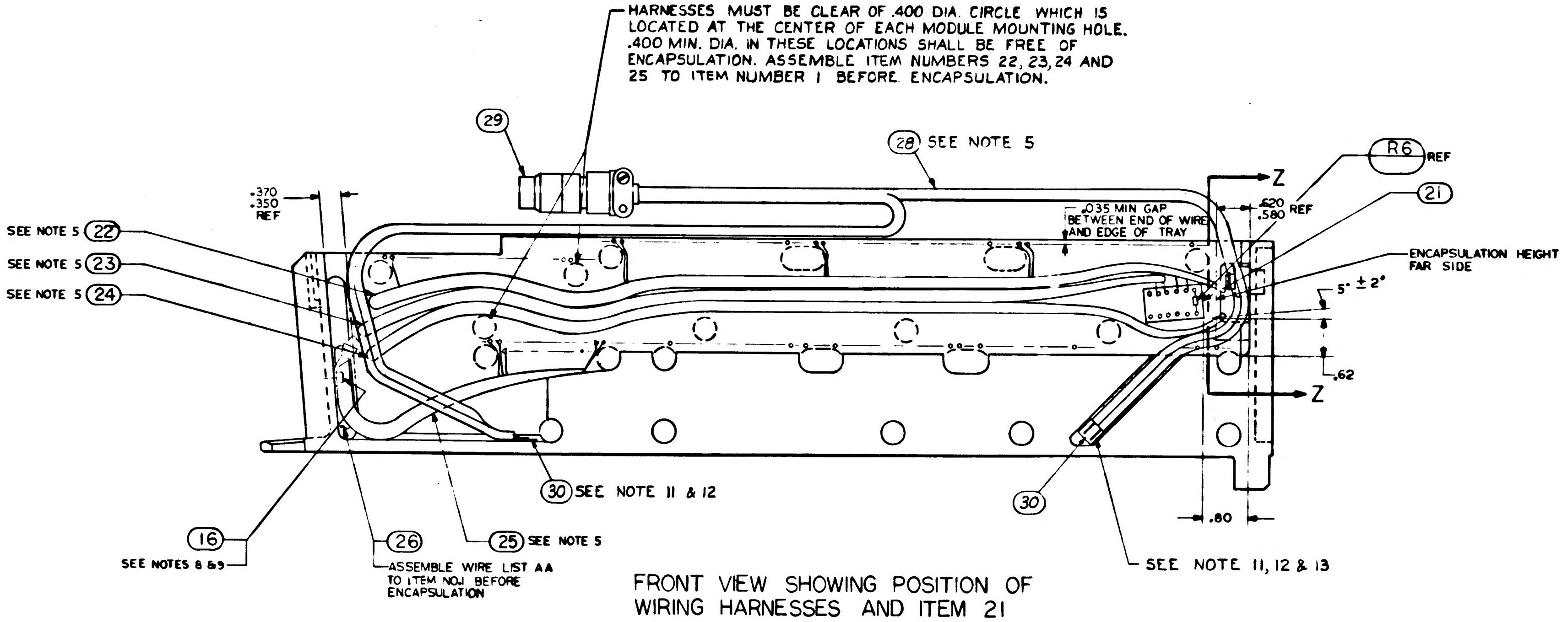
(6)

REVISIONS DRTE 109

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23NOV 64	

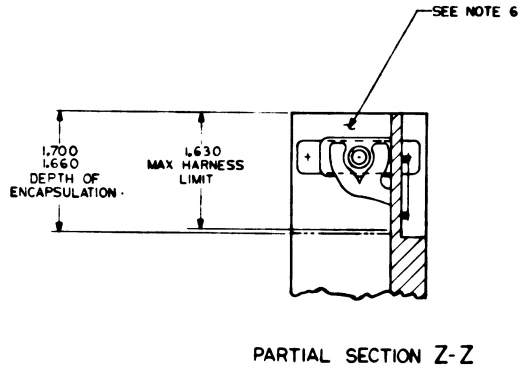

.370
.350 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

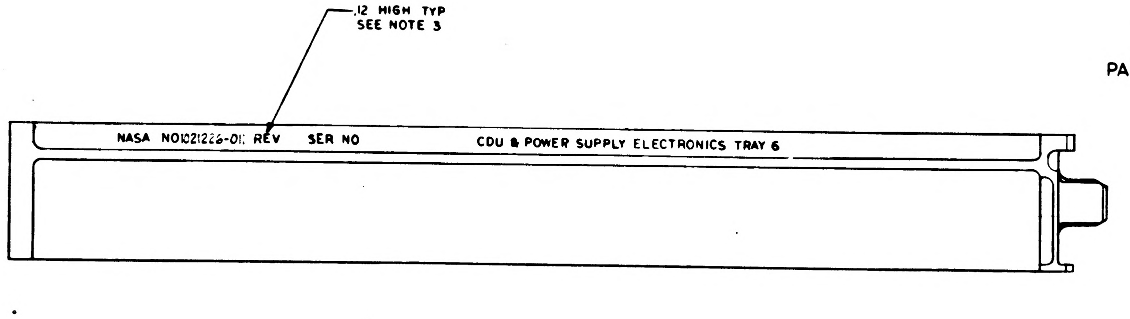

HARNESSES MUST BE CLEAR OF .400 DIA. CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN. DIA. IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 22, 23, 24 AND 25 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.
29
28 SEE NOTE 5
R6 REF
21
Z
Z
.370
.350
REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
5° ± 2°
.62
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
30 SEE NOTE 11 & 12
30
.80
16
SEE NOTES 8 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO.1 BEFORE ENCAPSULATION
25 SEE NOTE 5
SEE NOTE 11, 12 & 13

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND ITEM 21

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO1021226-011 REV SER NO
CDU & POWER SUPPLY ELECTRONICS TRAY 6

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO

LIST OF MATERIALS

1021226-011	1021207-011
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
XX ±.02 ±
DO NOT SCALE THIS DRAWING
MATERIAL ——
HEAT TREATMENT ——
FINAL FINISH ——

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN DATE 64
CHECKED 5 JUN 64
APPROVAL
APPROVAL 8 Jun 64
8 Jun 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 6

CODE IDENT NO
SIZE E
NASA DRAWING NO 1021216
SCALE 1/1
WT
SHEET 2 OF 2

1021216 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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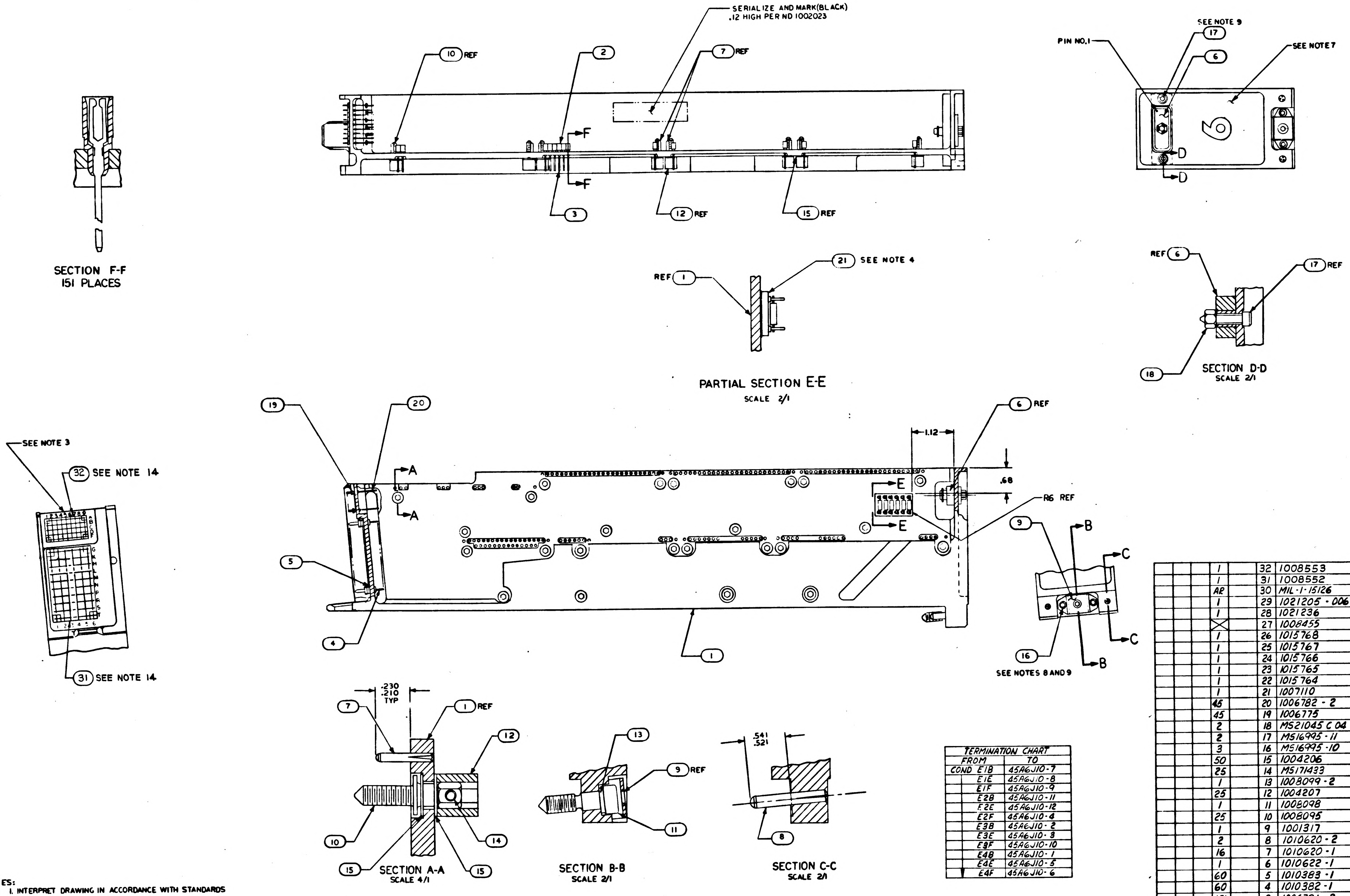
B	REVISED PER TDRR 16980	10 MAR 65	JJJ



TERMINATION CHART	
FROM	TO
COND E1B	45A6J10-7
E1E	45A6J10-8
E1F	45A6J10-9
E2B	45A6J10-11
E2E	45A6J10-12
E2F	45A6J10-4
E3B	45A6J10-2
E3E	45A6J10-3
E3F	45A6J10-10
E4B	45A6J10-1
E4E	45A6J10-5
E4F	45A6J10-6

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,19 AND 20 PER ND 1002136
3. MARK PER ND 1002019 WHITE
4. BOND ITEM NO.21 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION PER NASA DRAWING 1010657 AND NASA DRAWING 1010686
5. BOND ITEM NOS 22,23,24,25,26 & 28 TO ITEM NO.1 PER ND1002004 AS NECESSARY
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
8. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 IN LB.
10. PROCURE PER PS1007146.
10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PRIOR TO INSTALLATION OF ITEM NO. 28 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 28 COVER UNINSULATED SURFACES OF ITEM NO. 28 WITH ND1002004, TYPE 1.
13. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.
14. BOND ITEM NUMBERS 31 AND 32 TO ITEM NUMBERS 5 AND 19 PER ND 1002237.

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		32	1008553	GASKET
			1		31	1008552	GASKET
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-006	RECEPTACLE, DS TYPE
			1		28	1021236	WIRING HARNESS E
			X		27	1008455	WIRING DIAGRAM
			1		26	1015768	WIRE LIST AA
			1		25	1015767	WIRING HARNESS D
			1		24	1015766	WIRING HARNESS C
			1		23	1015765	WIRING HARNESS B
			1		22	1015764	WIRING HARNESS A
			1		21	1007110	BUFFER RESISTORS ASSEMBLY
			45		20	1006782-2	CONTACT, WRAPOST, MALE MIN
			45		19	1006775	INSULATOR, WRAPOST, MALE MIN
			2		18	MS21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			50		15	1004206	WASHER, THRUST
			25		14	MS171433	PIN, SPRING
			1		13	1008099-2	WASHER
			25		12	1004207	DRIVE CYLINDER
			1		11	1008098	SCREW, SOCKET HEAD
			25		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			16		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			60		5	1010383-1	INSULATOR, WRAPOST MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			151		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			151		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1021206	FRAME

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021226-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ -	+.02	+ -
- -	-.02	- -

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

DRAWN 3 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 5 JUN 64
NASA APPROVAL 6/4/64
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 6

CODE IDENT NO

SIZE E

1021216

SCALE 1:1

SHEET 1 OF 2

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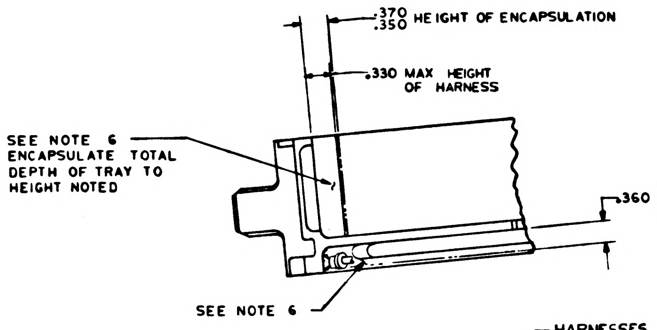
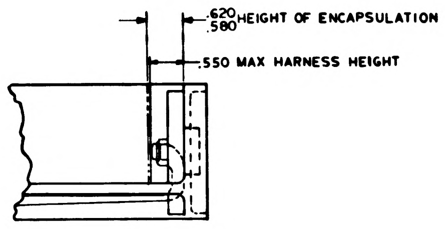
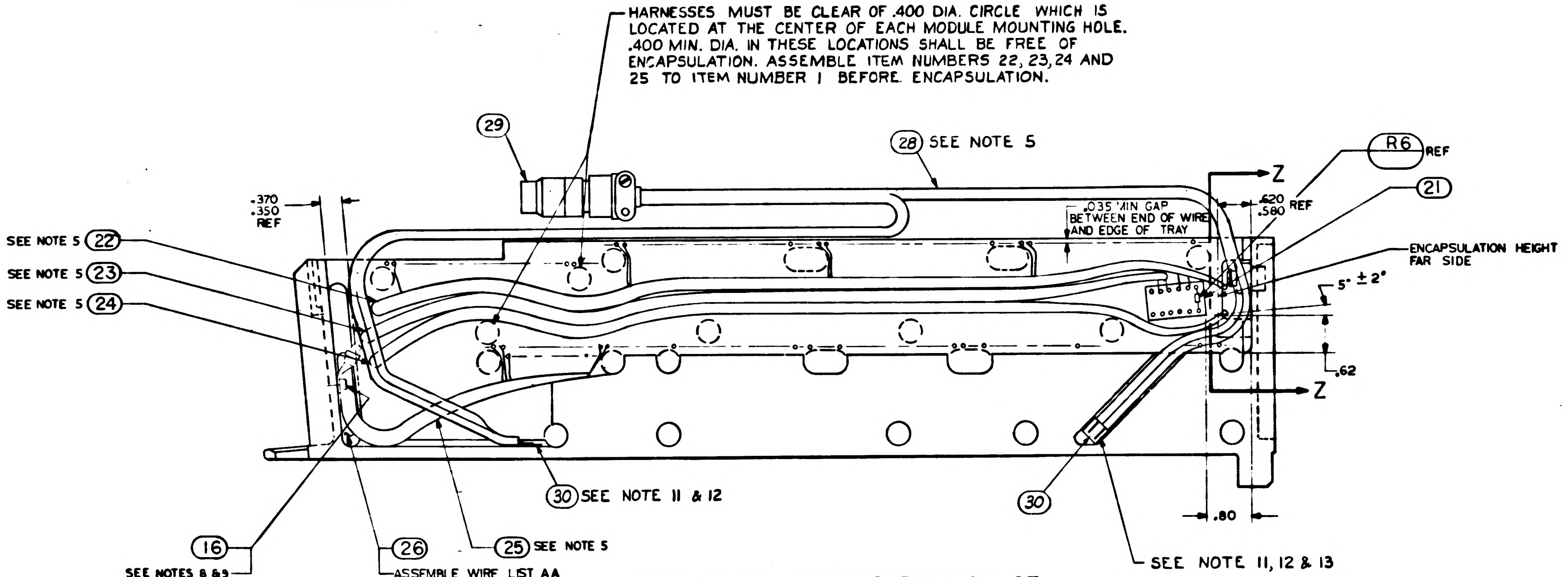
REVISIONS TDRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	
B	REVISED PER TDRR 16980	10 MAR 65	JJJ PJ

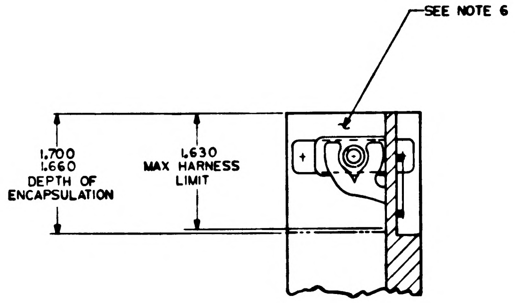

.370
.350 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 6 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

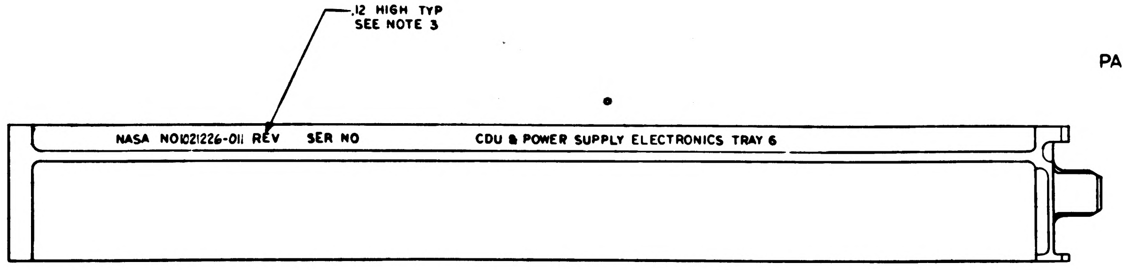

HARNESSES MUST BE CLEAR OF .400 DIA. CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN. DIA. IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 22, 23, 24 AND 25 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.
29
28 SEE NOTE 5
R6 REF
21
.370
.350
REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
Z
ENCAPSULATION HEIGHT FAR SIDE
5° ± 2°
.62
Z
30 SEE NOTE 11 & 12
30
.80
16
SEE NOTES 8 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO.1 BEFORE ENCAPSULATION
25 SEE NOTE 5
SEE NOTE 11, 12 & 13

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND ITEM 21

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO1021226-011 REV SER NO
CDU & POWER SUPPLY ELECTRONICS TRAY 6

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

1021226-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
XX ± .02 ±
DO NOT SCALE THIS DRAWING
MATERIAL ——
HEAT TREATMENT ——
FINAL FINISH ——

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN 3 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/3/64
APPROVAL 8 JUN 64
8 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

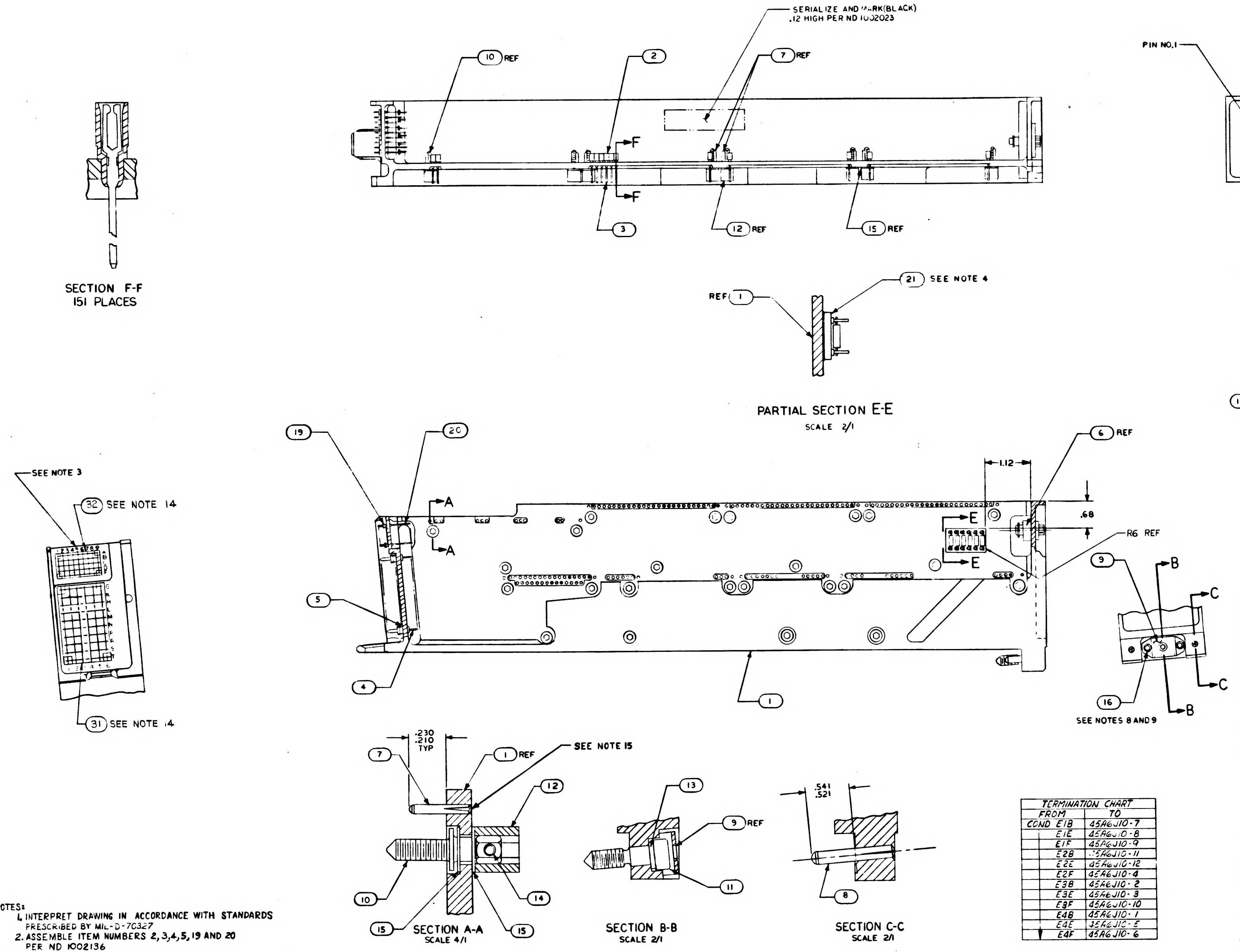
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 6

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	E	1021216
SCALE 1/1	WT	SHEET 2 OF 2

1021216 B

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 4321	25 [illegible] 64	
B	REVISED PER TDRR 16980	10 MAR 65	
C	REVISED PER TDRR 20118	21 JUNE 65	W



TERMINATION CHART	
FROM	TO
COND E1B	45A6J10-7
E1E	45A6J10-8
E1F	45A6J10-9
E2B	45A6J10-11
E2E	45A6J10-12
E2F	45A6J10-4
E3B	45A6J10-2
E3E	45A6J10-3
E3F	45A6J10-10
E4B	45A6J10-1
E4E	45A6J10-5
E4F	45A6J10-6

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,19 AND 20 PER ND 1002136
3. MARK PER ND 1002019 WHITE
4. BOND ITEM NO.21 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION PER NASA DRAWING 1010657 AND NASA DRAWING 1010686
5. BOND ITEM NOS 22,23,24,25,26 & 28 TO ITEM NO. 1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
8. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 IN LB.
10. PROCURE PER PS1007146.

10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PRIOR TO INSTALLATION OF ITEM NO. 28 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 28 COVER UNINSULATED SURFACES OF ITEM NO. 28 WITH ND 1002004, TYPE I.
13. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.
14. BOND ITEM NUMBERS 31 AND 32 TO ITEM NUMBERS 5 AND 19 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

QUANTITY REQUIRED								
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		32	1008553	GASKET
			1		31	1008552	GASKET
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-006	RECEPTACLE, DS TYPE
			1		28	1021236	WIRING HARNESS E
			X		27	1008455	WIRING DIAGRAM
			1		26	1015768	WIRE LIST AA
			1		25	1015767	WIRING HARNESS D
			1		24	1015766	WIRING HARNESS C
			1		23	1015765	WIRING HARNESS B
			1		22	1015764	WIRING HARNESS A
			1		21	1007110	BUFFER RESISTORS ASSEMBLY
			45		20	1006782-2	CONTACT, WRAPOST, MALE MIN
			45		19	1006775	INSULATOR, WRAPOST, MALE MIN
			2		18	MS21045C04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP. SOCKET HEAD
			50		15	1004206	WASHER, THRUST
			25		14	MS171433	PIN, SPRING
			1		13	1003099-2	WASHER
			25		12	1004207	DRIVE CYLINDER
			1		11	1008098	SCREW, SOCKET HEAD
			25		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			16		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			60		5	1010383-1	INSULATOR, WRAPOST MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			151		3	1006781-2	CONTACT, WRAPOST, FEMALE M.
			151		2	1006774	INSULATOR, WRAPOST, FEMALE M.
			1		1	1021206	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021226-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ -	+.02	+ -
- -	-.02	- -

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBL-
TRAY 6

CODE IDENT NO 80230
SIZE E
1021216
SCALE 1:1
SHEET 1 OF 2

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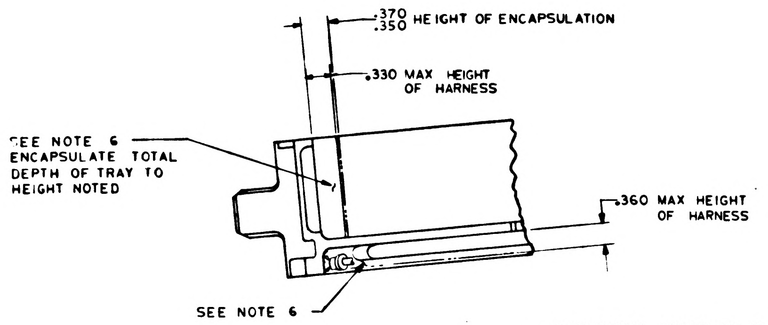
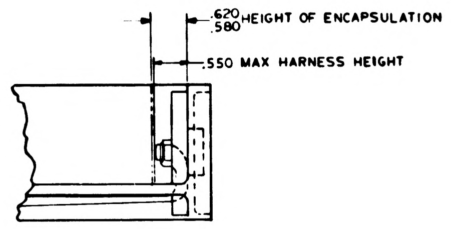
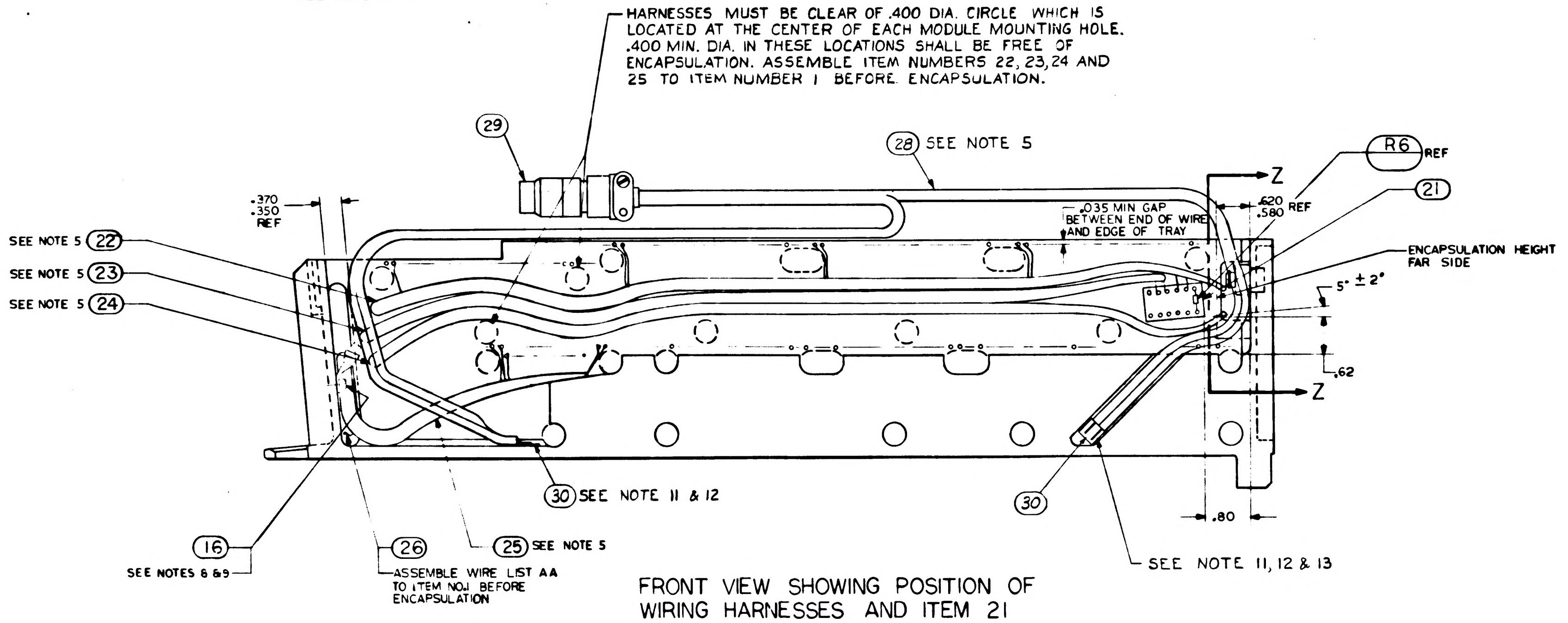
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	3 NOV 64	
B	REVISED PER TDRR 16980	10 MAR 65	JJJ
C	REVISION STATUS CHANGED	21 JUNE 65	MJR

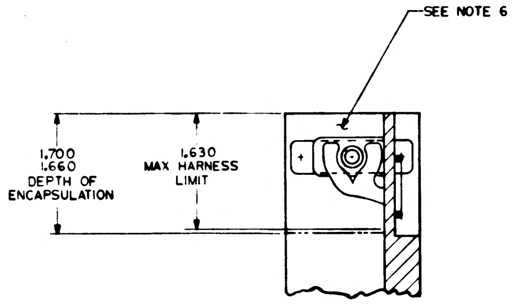

.370
.350 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

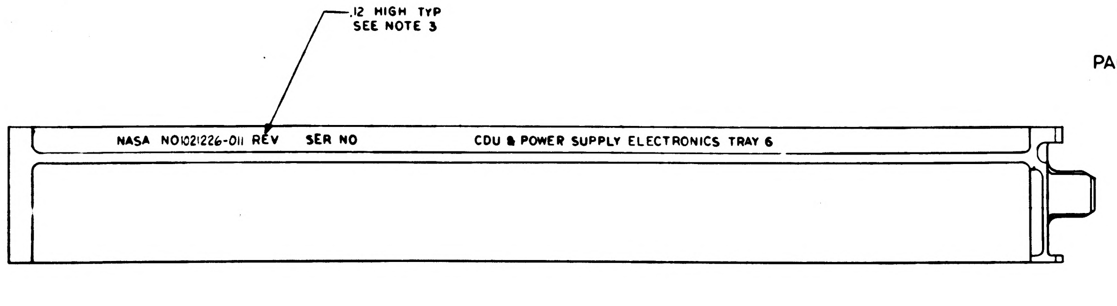

HARNESSES MUST BE CLEAR OF .400 DIA. CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN. DIA. IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 22, 23, 24 AND 25 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.
29
28 SEE NOTE 5
R6 REF
21
Z
Z
.370
.350
REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
5° ± 2°
.62
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
30 SEE NOTE 11 & 12
30
.80
SEE NOTE 11, 12 & 13
16
SEE NOTES 6 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO.I BEFORE ENCAPSULATION
25 SEE NOTE 5

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND ITEM 21

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO1021226-011 REV SER NO
CDU & POWER SUPPLY ELECTRONICS TRAY 6

MARKING VIEW AFTER ENCAPSULATION

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO

1021226-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
XX ± .02 ±
DO NOT SCALE THIS DRAWING
MATERIAL ——
HEAT TREATMENT ——
FINAL FINISH ——

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

DRAWN DATE
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUNE 64
8 JULY 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 6

CODE IDENT NO	SIZE	NASA DRAWING NO
80230	E	1021216
SCALE 1/1	WT	SHEET 2 OF 2

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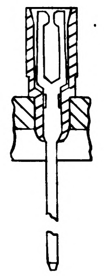
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 4321	25 NOV 64	
B	REVISED PER TDRR 16980	10 MAR 65	J
C	REVISED PER TDRR 20118	21 JUNE 65	W
D	REVISED PER TDRR 20787	JUL 66	B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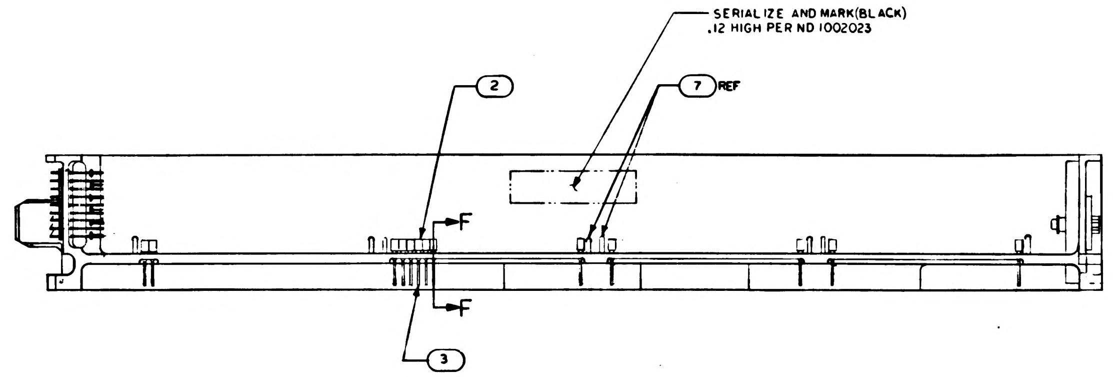

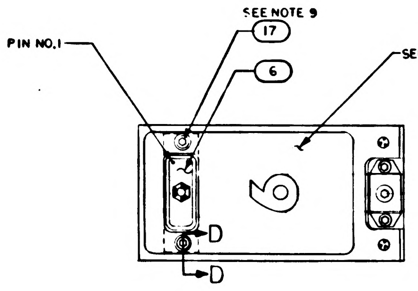

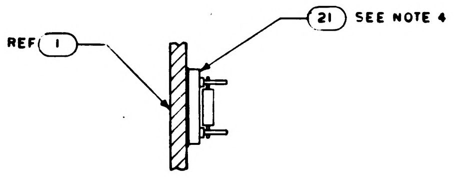

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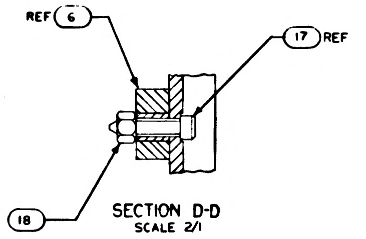
SCALE 2/1



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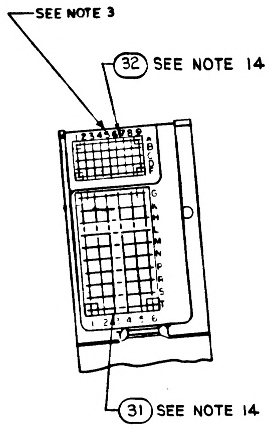
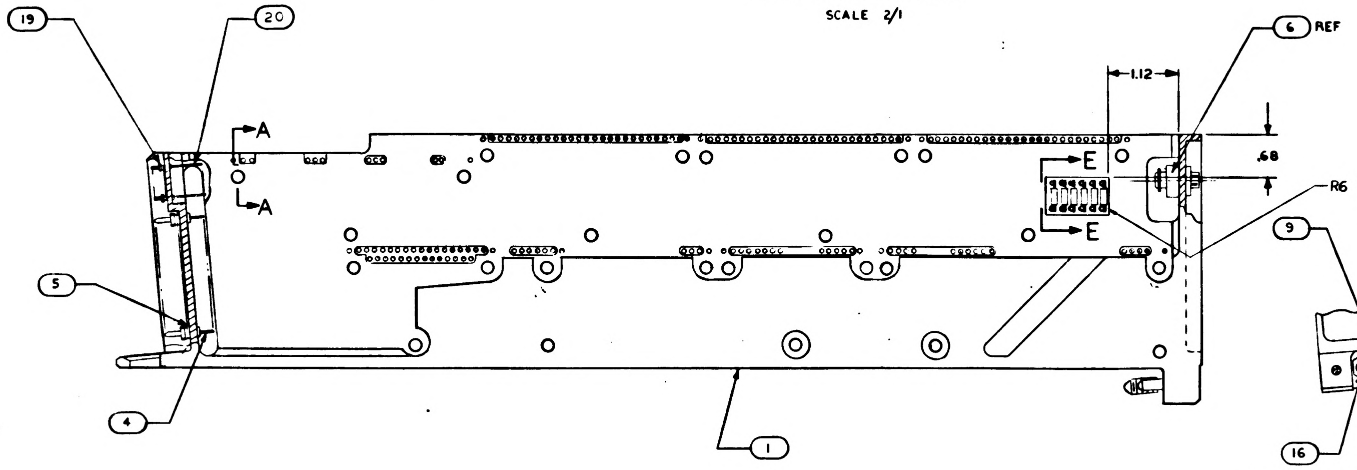
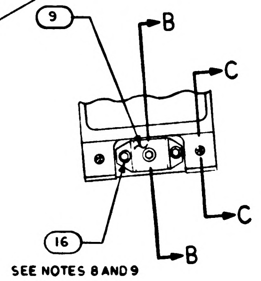
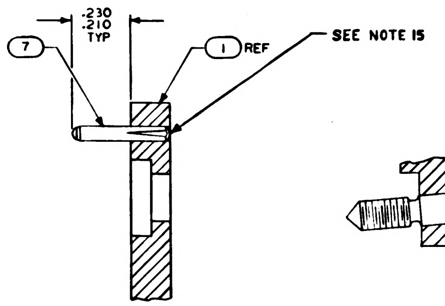
SCALE 2/1

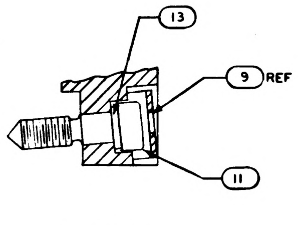




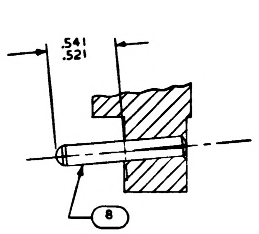




SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND E1B	45A6J10-7
E1E	45A6J10-8
E1F	45A6J10-9
E2B	45A6J10-11
E2E	45A6J10-12
E2F	45A6J10-4
E3B	45A6J10-2
E3E	45A6J10-3
E3F	45A6J10-10
E4B	45A6J10-1
E4E	45A6J10-5
E4F	45A6J10-6

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,19 AND 20 PER ND 1002136
3. MARK PER ND 1002019 WHITE
4. BOND ITEM NO.21 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION PER NASA DRAWING 1010657 AND NASA DRAWING 1010686
5. BOND ITEM NOS 22,23,24,25,26 & 28 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
8. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 IN LB.
10. PROCURE PER PS1007146.

10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PRIOR TO INSTALLATION OF ITEM NO. 28 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 28 COVER UNINSULATED SURFACES OF ITEM NO. 28 WITH ND 1002004, TYPE I.
13. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.
14. BOND ITEM NUMBERS 31 AND 32 TO ITEM NUMBERS 5 AND 19 PER ND 1002237.
15. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
16. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		32	1008553	GASKET
			1		31	1008552	GASKET
			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		29	1021205-006	RECEPTACLE, DS TYPE
			1		28	1021236	WIRING HARNESS E
			X		27	1008455	WIRING DIAGRAM
			1		26	1015768	WIRE LIST AA
			1		25	1015767	WIRING HARNESS D
			1		24	1015766	WIRING HARNESS C
			1		23	1015765	WIRING HARNESS B
			1		22	1015764	WIRING HARNESS A
			1		21	1007110	BUFFER RESISTORS ASSEMBLY
			45		20	1006782-2	CONTACT, WRAPOST, MALE MIN
			45		19	1006775	INSULATOR, WRAPOST, MALE MIN
			2		18	MS21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP. SOCKET HEAD
			~~50~~		~~15~~	~~1004206~~	~~WASHER, THRUST~~
			~~25~~		~~14~~	~~MS171499~~	~~PIN, SPRING~~
			1		13	1008099-2	WASHER
			~~25~~		~~12~~	~~1004267~~	~~DRIVE CYLINDER~~
			1		11	1008098	SCREW, SOCKET HEAD
			~~25~~		~~10~~	~~1008095~~	~~SCREW, JACK~~
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			16		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPTACLE
			60		5	1010383-1	INSULATOR, WRAPOST MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			151		3	1006781-2	CONTACT, WRAPOST, FEMALE M.
			151		2	1006774	INSULATOR, WRAPOST, FEMALE M.
			1		1	1021206	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021226-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + - - -
DECIMALS +.02 -.02
ANGLES + - - -
DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN 3 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL 3/4/64
MIT APPROVAL W Cuyler 14/64

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBLY
TRAY 6

CODE IDENT NO 80230
SIZE E
1021216
SCALE 1:1
SHEET 2 OF 2

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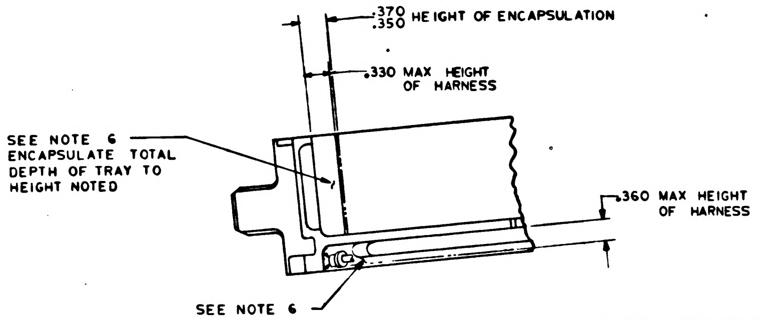
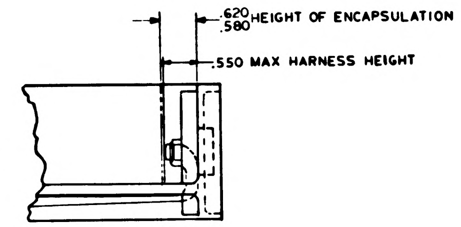
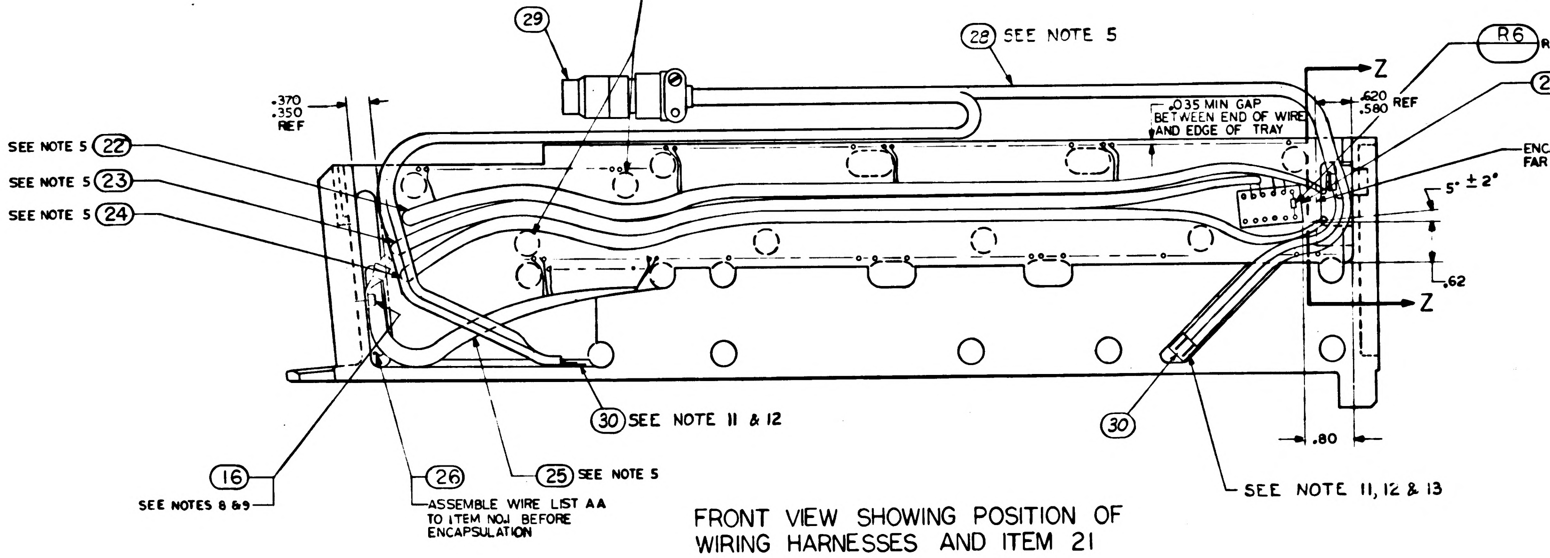
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	JULY 64	[illegible]
B	REVISED PER TDRR 16980	MAR 65	[illegible]
C	REVISION STATUS CHANGED	JUNE	[illegible]
D	REVISION STATUS CHANGED	62	[illegible]


.370
.350 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 6 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 6

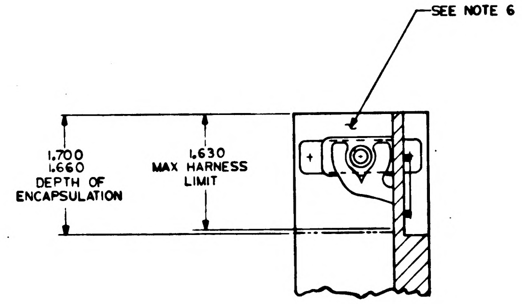

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

HARNESSES MUST BE CLEAR OF .400 DIA. CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN. DIA. IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 22, 23, 24 AND 25 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.

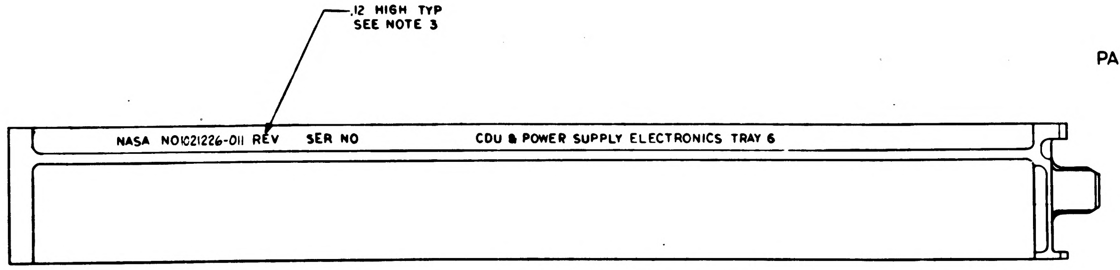

29
28 SEE NOTE 5
R6 REF
21
Z
Z
.370
.350
REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
5° ± 2°
.62
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
30 SEE NOTE 11 & 12
30
.80
16
SEE NOTES 8 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO.1 BEFORE ENCAPSULATION
25 SEE NOTE 5
SEE NOTE 11, 12 & 13

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND ITEM 21

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA N01021226-011 REV SER NO
CDU & POWER SUPPLY ELECTRONICS TRAY 6

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021226-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
XX ± .02 ±
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/3/64
APPROVAL 8 JUN 64
8 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 JULY 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

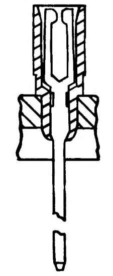
FRAME ASSEMBLY
TRAY 6

CODE IDENT NO 80230
SIZE E
NASA DRAWING NO 1021216
SCALE 1/1
WT
SHEET 2 OF 2

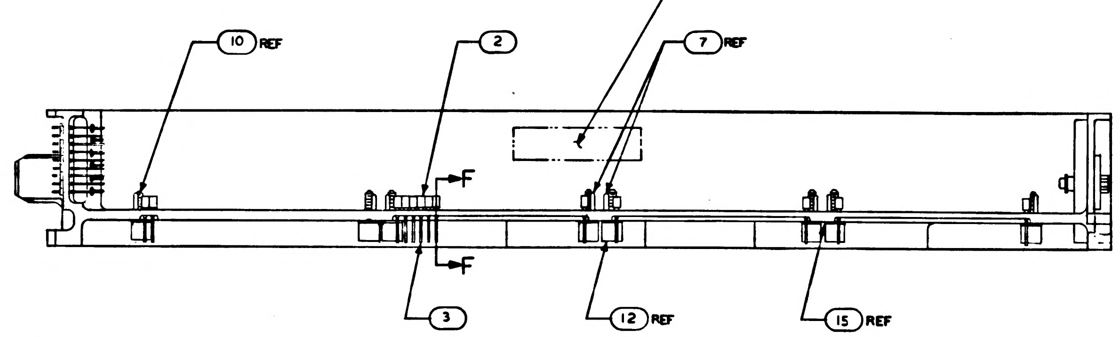
1021216 D

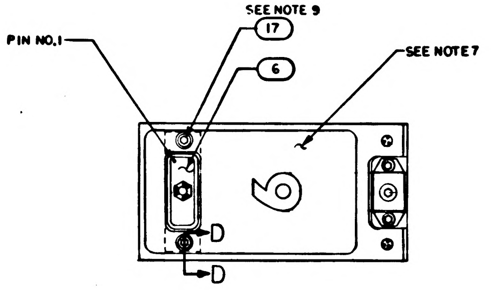
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

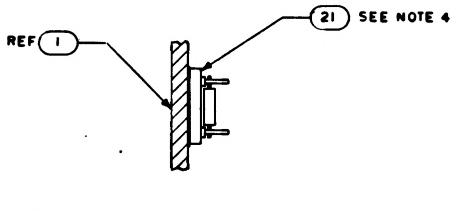
REVISIONS [illegible]			
SYM	DESCRIPTION	DATE	APPROVAL



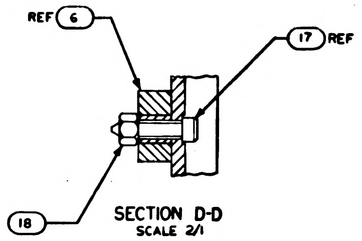
SECTION F-F
151 PLACES



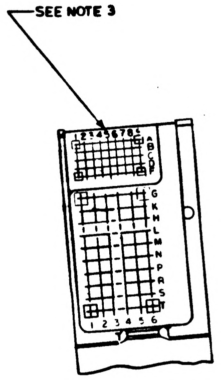


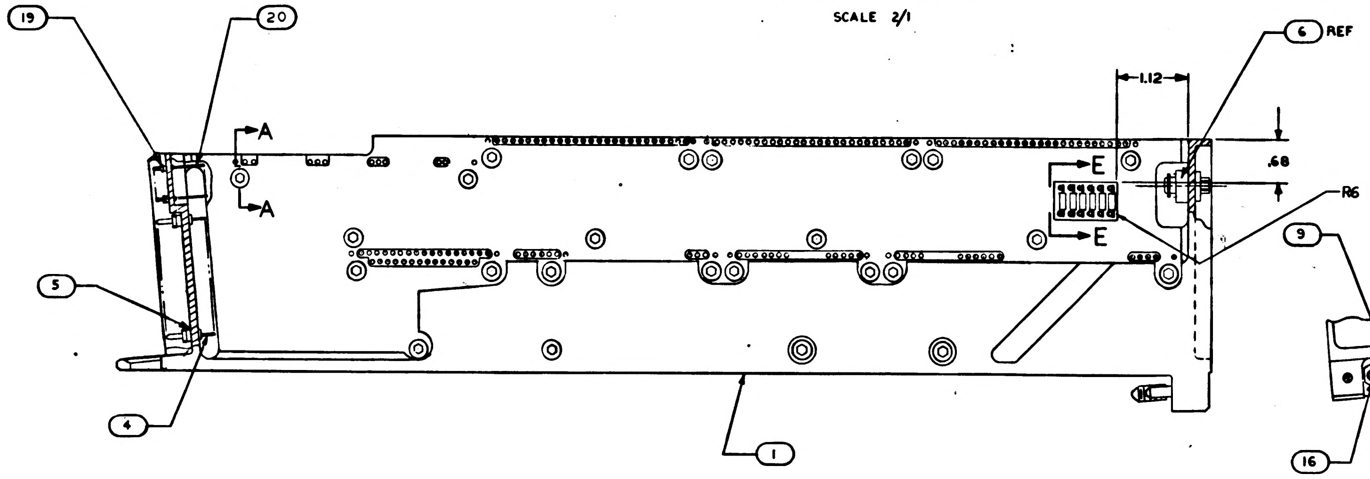


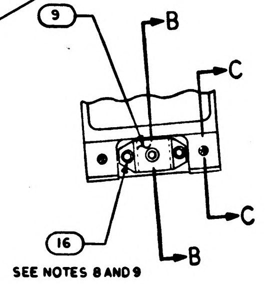
PARTIAL SECTION E-E
SCALE 2/1



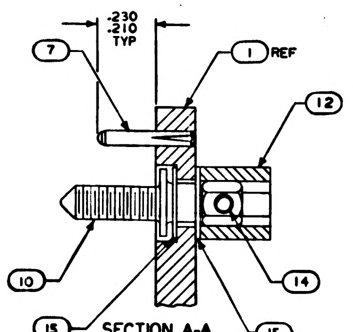
SECTION D-D
SCALE 2/1



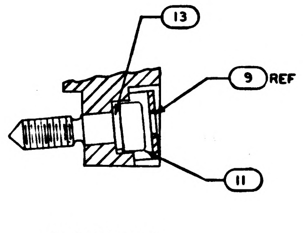




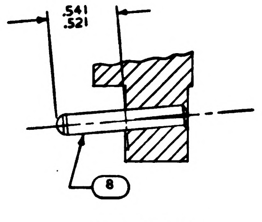
SEE NOTES 8 AND 9



SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND E1B	45A6J10-7
E1E	45A6J10-8
E1F	45A6J10-9
E2B	45A6J10-11
E2E	45A6J10-12
E2F	45A6J10-4
E3B	45A6J10-2
E3E	45A6J10-3
E3F	45A6J10-10
E4B	45A6J10-1
E4E	45A6J10-5
E4F	45A6J10-6

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,19 AND 20 PER ND 1002136
3. MARK PER ND 1002019 WHITE
4. BOND ITEM NO.21 TO ITEM NO.1 PER ND 1002004 USING FLEXIBLE FORMULATION PER NASA DRAWING 1010657 AND NASA DRAWING 1010686
5. BOND ITEM NOS 22,23,24,25,26 & 28 TO ITEM NO.1 PER ND1002004 AS NECESSARY
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
8. COAT THREADS OF ITEM NO.16 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
9. MOUNTING TORQUE FOR ITEM NUMBERS 16 AND 17 TO ITEM NO.1 TO BE 5.0/5.5 IN LB.
10. PROCURE PER PS1007146.

10. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
11. PRIOR TO INSTALLATION OF ITEM NO. 28 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM NO. 28 COVER UNINSULATED SURFACES OF ITEM NO. 28 WITH ND1002004, TYPE I.
13. FILL FLUSH TO OUTSIDE SURFACE WITH 1021240.

MASTER

			AR		30	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .50 WIDE
			1		29	1021205-006	RECEPTACLE, DS TYPE
			1		28	1021236	WIRING HARNESS E
			☒		27	1010096	WIRING DIAGRAM
			1		26	1015768	WIRE LIST AA
			1		25	1015767	WIRING HARNESS D
			1		24	1015766	WIRING HARNESS C
			1		23	1015765	WIRING HARNESS B
			1		22	1015764	WIRING HARNESS A
			1		21	1007110	BUFFER RESISTORS ASSEMBLY
			45		20	1006782-2	CONTACT, WRAPOST, MALE MIN
			45		19	1006775	INSULATOR, WRAPOST, MALE MIN
			2		18	MS21045 C 04	NUT, SELF-LOCKING HEX
			2		17	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		16	MS16995-10	SCREW, CAP, SOCKET HEAD
			50		15	1004206	WASHER, THRUST
			25		14	MS171433	PIN, SPRING
			1		13	1008099-2	WASHER
			25		12	1004207	DRIVE CYLINDER
			1		11	1008098	SCREW, SOCKET HEAD
			25		10	1008095	SCREW, JACK
			1		9	1001317	RETAINER, JACK SCRE
			2		8	1010620-2	PIN, GUIDE
			16		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR, RECEPT
			60		5	1010393-1	INSULATOR, WRAPOS
			60		4	1010382-1	CONTACT, BLADE EDGE C TOR
			151		3	1006781-2	CONTACT, WRAPOST, FEM MIN
			151		2	1006774	INSULATOR, WRAPOST, FEM MIN
			1		1	1021206	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021226-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ -	+.02	+ -
- -	-.02	- -

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN 3 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL R Oding 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBL
TRAY 6

CODE IDENT NO.
SIZE E
1021216
SCALE 1:1
SHEET 1 OF 2

INCHES

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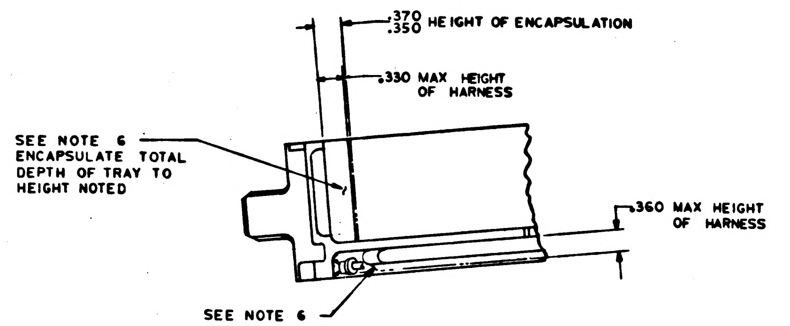
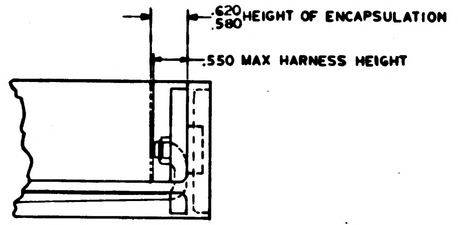
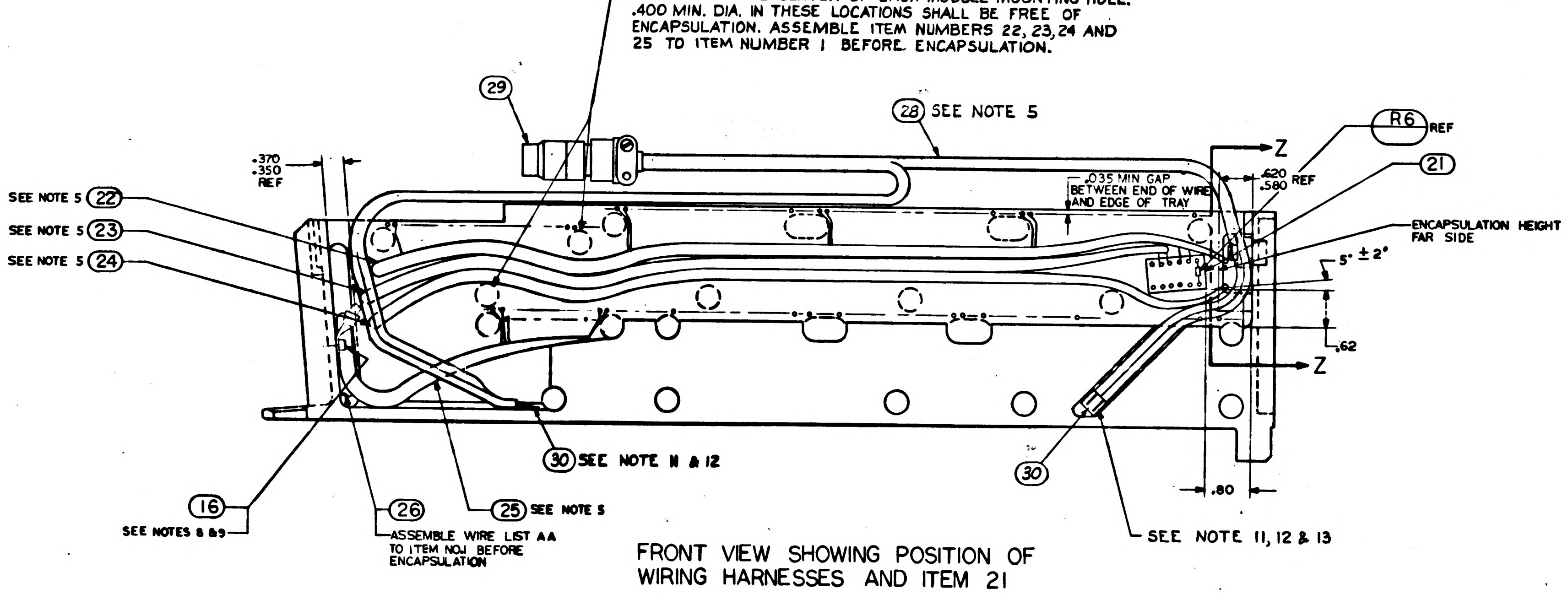
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL


.370
.350 HEIGHT OF ENCAPSULATION
.330 MAX HEIGHT OF HARNESS
SEE NOTE 6 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HEIGHT OF HARNESS
SEE NOTE 6

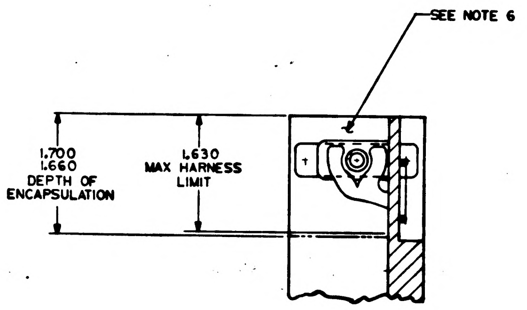

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT


HARNESSES MUST BE CLEAR OF .400 DIA. CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN. DIA. IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 22, 23, 24 AND 25 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.

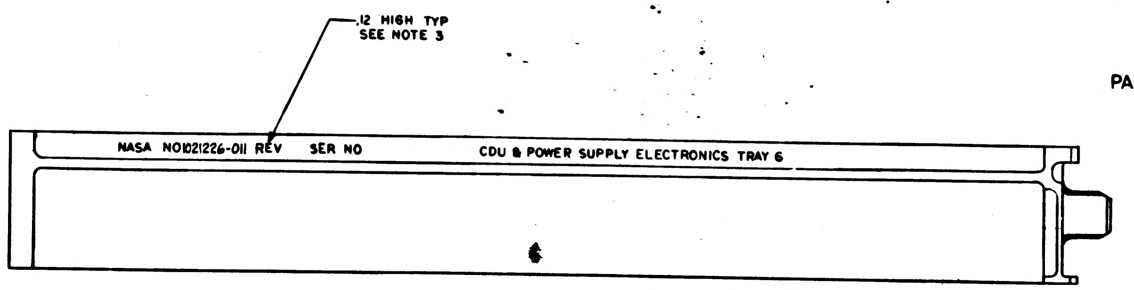
29
28 SEE NOTE 5
R6 REF
21
.370
.350
REF
SEE NOTE 5 22
SEE NOTE 5 23
SEE NOTE 5 24
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
5° ± 2°
.62
Z
Z
30 SEE NOTE 11 & 12
30
.80
16
SEE NOTES 8 & 9
26
ASSEMBLE WIRE LIST AA TO ITEM NO.1 BEFORE ENCAPSULATION
25 SEE NOTE 5
SEE NOTE 11, 12 & 13

FRONT VIEW SHOWING POSITION OF WIRING HARNESSES AND ITEM 21

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 10


SEE NOTE 6
1.700
1.660
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

PARTIAL SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO1021226-011 REV SER NO
CDU & POWER SUPPLY ELECTRONICS TRAY 6

MARKING VIEW AFTER ENCAPSULATION

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021226-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
XX ±.02 ±
DO NOT SCALE THIS DRAWING
MATERIAL ——
HEAT TREATMENT ——
FINAL FINISH ——

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
Contract NAS 9-497
DRAWN 3 JUN 64 DATE
CHECKED 5 JUN 64
APPROVAL
APPROVAL 6 Jun 64
8 Jun 64
NASA APPROVAL
7/14
MIT APPROVAL 14 Jul 64

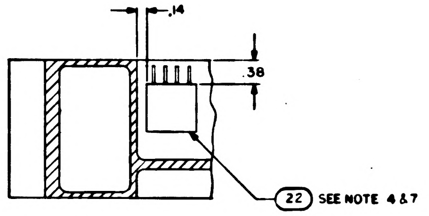
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 6

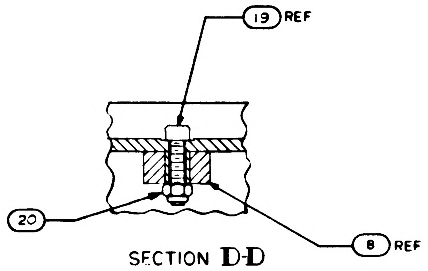
CODE IDENT NO. SIZE E NASA DRAWING NO. 1021216
SCALE 1/1 WT SHEET 2 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

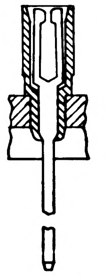
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	[illegible]	[illegible]



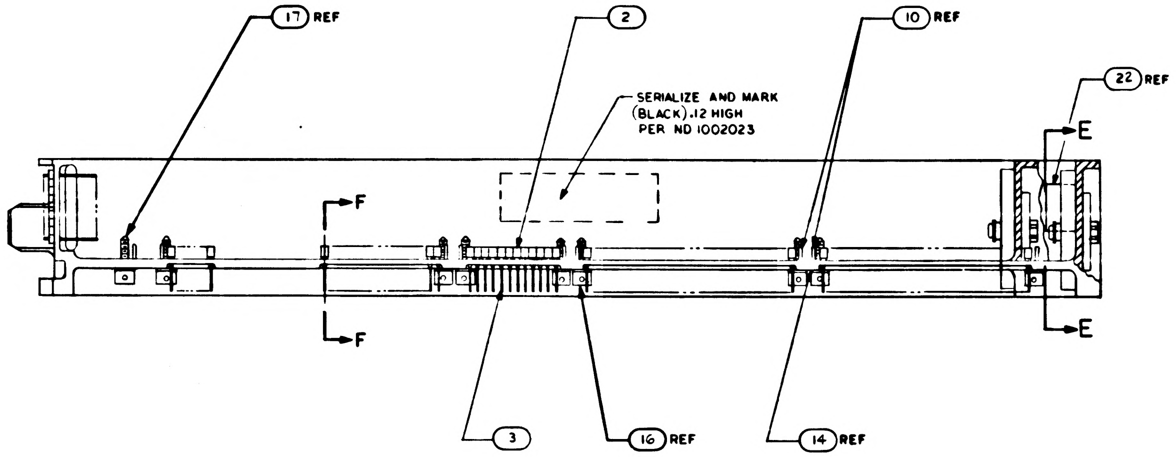
PARTIAL SECTION E-E

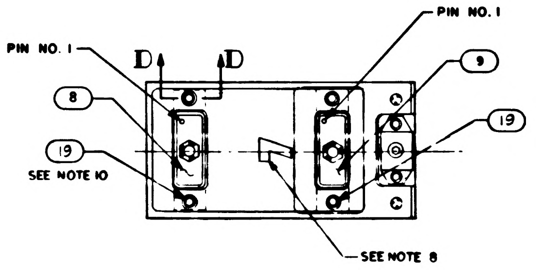


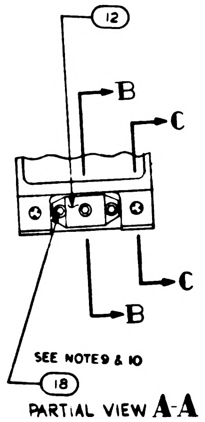
SECTION D-D
SCALE 2/1



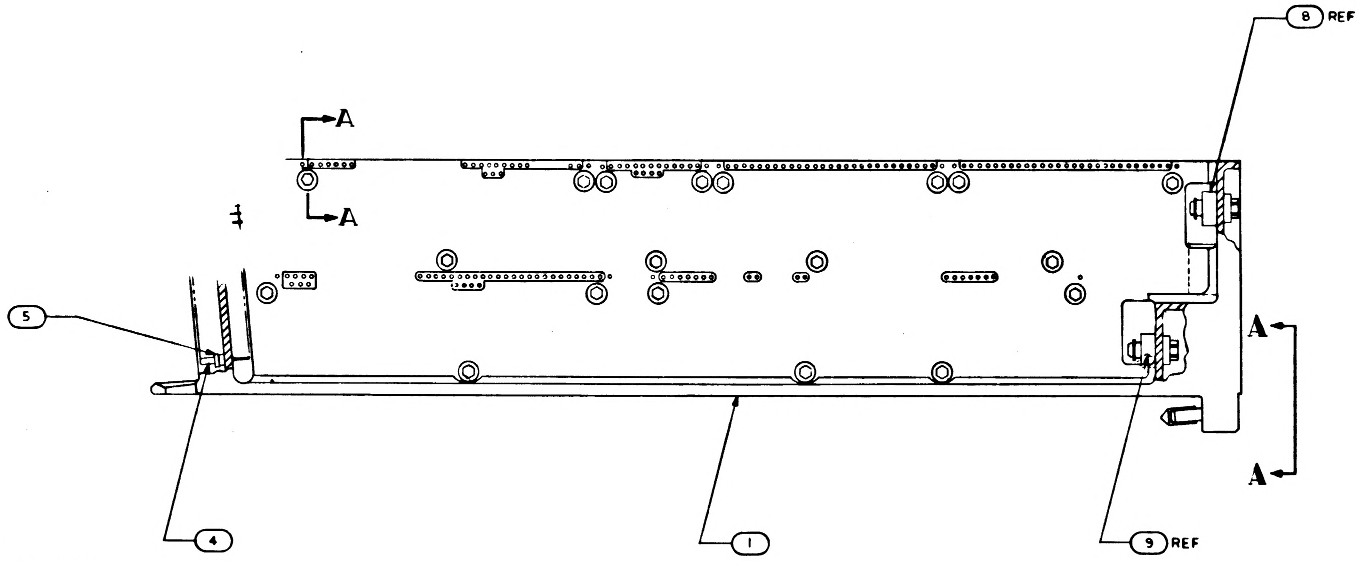
PARTIAL SECTION F-F
143 PLACES

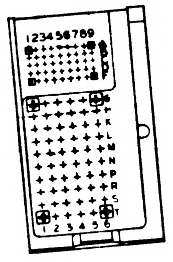






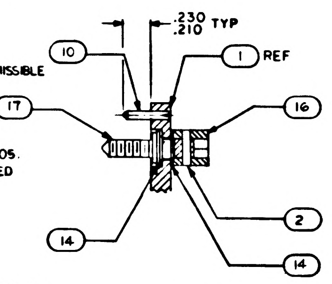
PARTIAL VIEW A-A



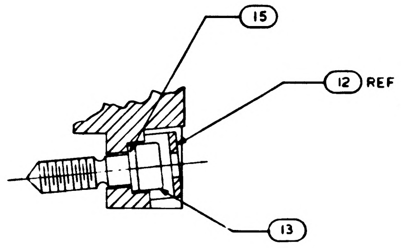


NOTES:

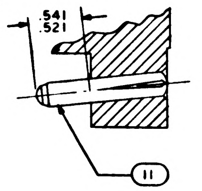
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NO.22 TO ITEM NO.1 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND NASA DWG 1010686
5. BOND ITEM NUMBERS 23, 24, 25, 26, 27 & 28 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO.22
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
11. ALL NICKEL WIRE HARNESS TERMINATION TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT
12. PROCURE PER PS1007147
13. PRIOR TO INSTALLATION OF ITEM NO. 27 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND 1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART

FROM	TO
45A7 E9	45A7J1-35
E10	-2
E11	-1
E12	-14
E13	-7
E14	-20
E15	-27
E22	-22
E23	-38
COND E1B	45 A7 J9-2
E1E	-3
E1F	-4
E2B	-5
E2E	-6
E2F	-7

LIST OF PARTS AND MATERIALS

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		32	1021204-007	CONTACT
			X		31	1008456	WIRING DIAGRAM
			AR		30	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE DS TYPE
			1		28	1015758	WIRE LIST AA
			1		27	1021237	WIRING HARNESS E
			1		26	1015757	WIRING HARNESS D
			1		25	1015756	WIRING HARNESS C
			1		24	1015755	WIRING HARNESS B
			1		23	1015754	WIRING HARNESS A
			1		22	1007092	BUFFER RESISTOR MODULE ASSY
			19		21	MS171433	PIN, SPRING
			4		20	MS 21045 C 04	NUT, SELF-LOCKING HEX
			4		19	MS-16995-11	SCREW, CAP, SOCKET HEAD
			3		18	MS 16995-10	SCREW, CAP, SOCKET HEAD
			19		17	1008095	SCREW, JACK
			19		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			38		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			1		12	1001317	RETAINER, JACK SCREW
			2		11	1010620-2	PIN GUIDE
			12		10	1010620-1	PIN, GUIDE
			1		9	1010622-2	CONNECTOR, RECEPTACLE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			143		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			143		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008177	FRAME

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021227-011	1021207-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
-	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

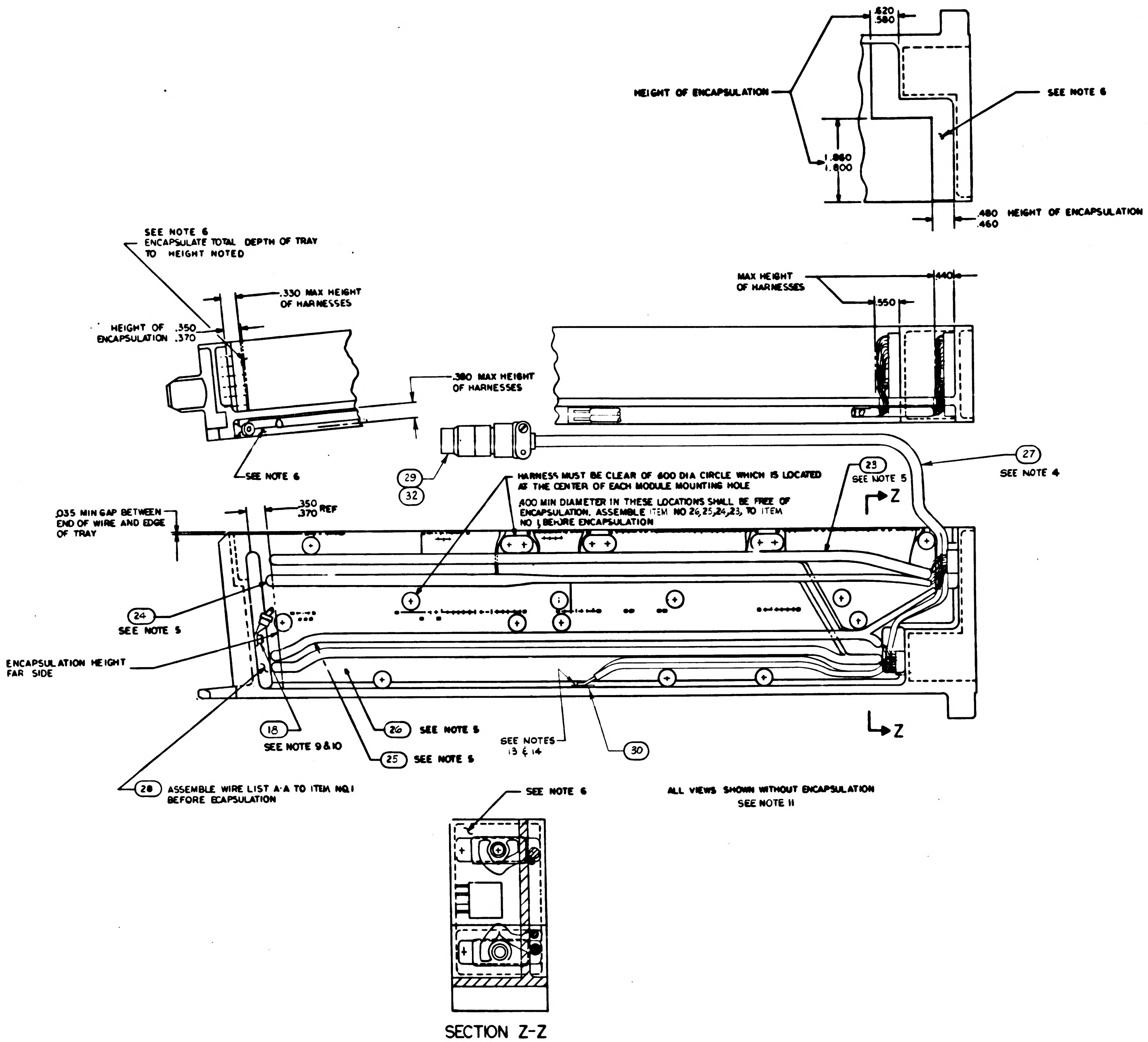
AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN 2 JUNE 64 DATE
CHECKED 5 JUN 64
APPROVAL 5/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

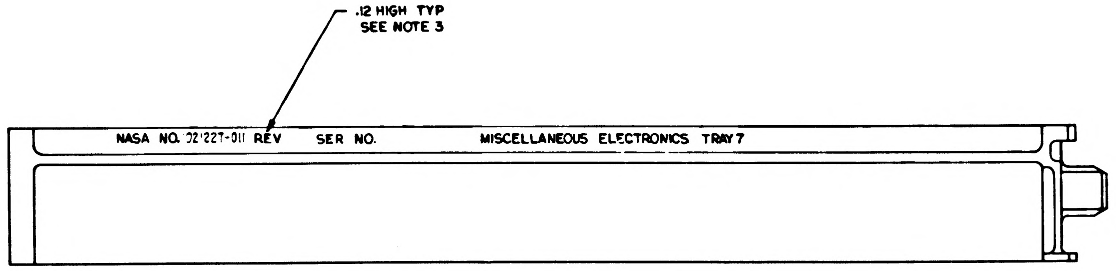
FRAME ASSEMBLY
TRAY 7

CODE IDENT NO
SIZE E
1021217
SCALE 1/1
SHEET 1 OF 2

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	5 NOV 64	[illegible]


HEIGHT OF ENCAPSULATION
.620
.580
SEE NOTE 6
1.860
1.800
.480 HEIGHT OF ENCAPSULATION
.460
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY
TO HEIGHT NOTED
.330 MAX HEIGHT
OF HARNESSES
HEIGHT OF ENCAPSULATION .350
.370
.380 MAX HEIGHT
OF HARNESSES
SEE NOTE 6
MAX HEIGHT
OF HARNESSES
.440
.550
29
32
HARNESS MUST BE CLEAR OF .600 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 26,25,24,23, TO ITEM NO 1 BEFORE ENCAPSULATION
23
SEE NOTE 5
27
SEE NOTE 4
Z
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
24
SEE NOTE 5
ENCAPSULATION HEIGHT FAR SIDE
18
SEE NOTE 9 & 10
26 SEE NOTE 5
25 SEE NOTE 5
SEE NOTES 13 & 14
30
Z
28 ASSEMBLE WIRE LIST A-A TO ITEM NO.1 BEFORE ECAPSULATION
SEE NOTE 6
ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021227-011 REV
SER NO.
MISCELLANEOUS ELECTRONICS TRAY 7

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021227-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
Cambridge, Mass.
Contract NAS 9-497
DRAWN DATE 3 June 64
CHECKED 5 June 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021217
SCALE FULL
WT
SHEET 2 OF 2

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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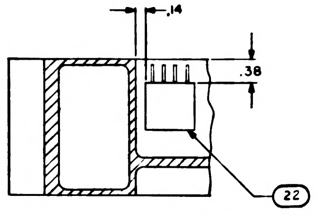
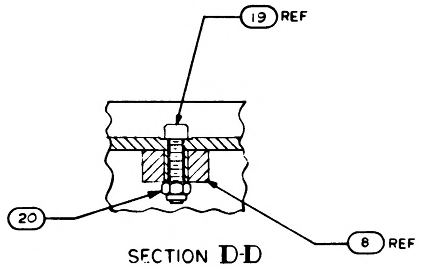
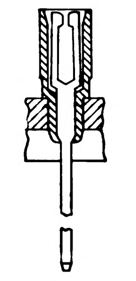
B	REVISED PER TDRR 166-3	26-FEB-65	



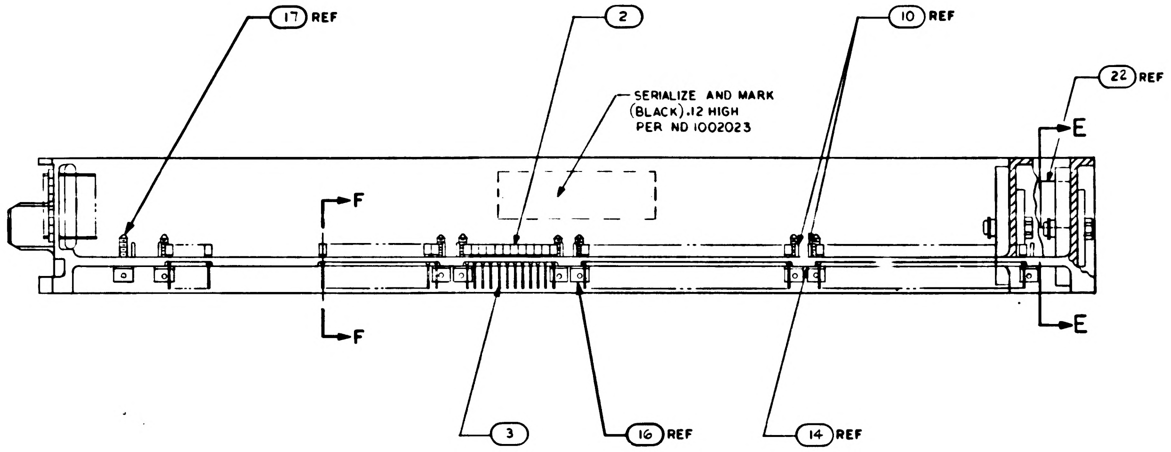
PARTIAL SECTION E-F

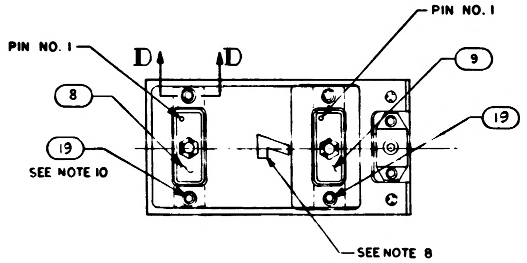


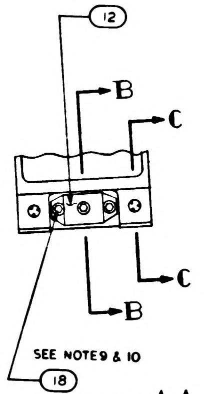
SECTION D-D
SCALE 2/1



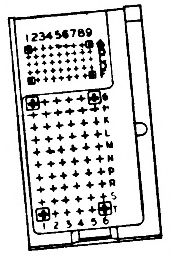
PARTIAL SECTION F-F
143 PLACES

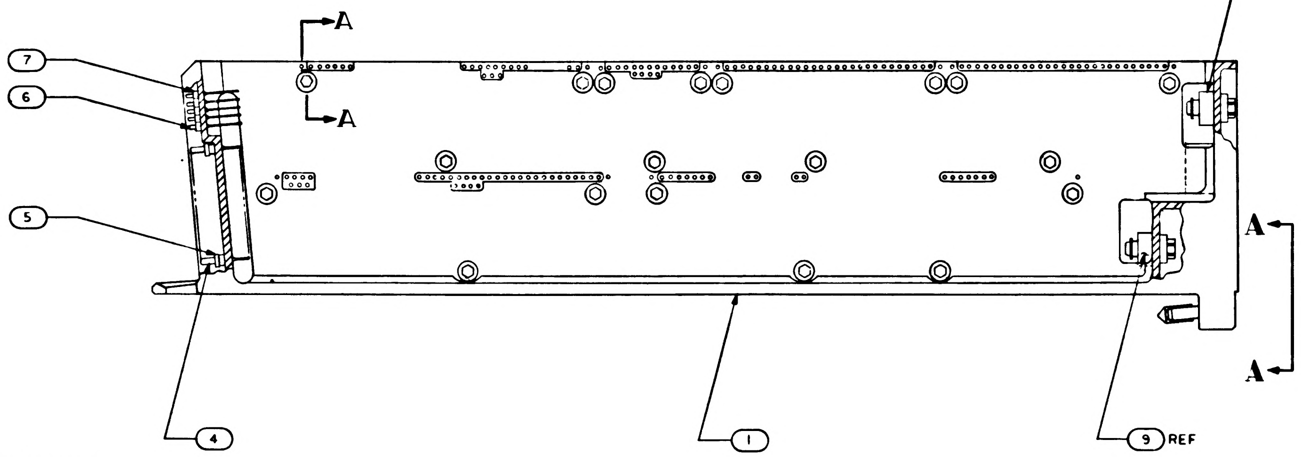




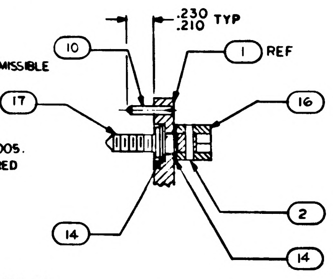


PARTIAL VIEW A-A

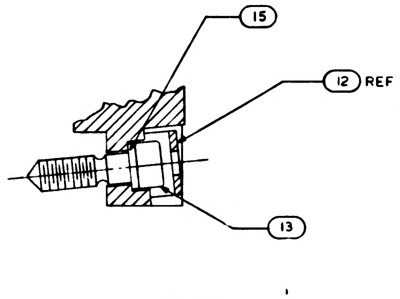




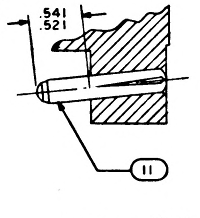
NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NO.22 TO ITEM NO.1 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND NASA DWG 1010686
5. BOND ITEM NUMBERS 23, 24, 25, 26, 27 & 23 TO ITEM NO.1 PER ND1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO.22
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
11. ALL NICKEL WIRE HARNESS TERMINATION TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT
12. PROCURE PER PS1007147
13. PRIOR TO INSTALLATION OF ITEM NO. 27 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND 1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A7 E9	45A7J1—35
E10	-2
E11	-1
E12	-14
E13	-7
E14	-20
E15	-27
E22	-22
E23	-38
COND E1B	45 A7 J9 - 2
E1E	-3
E1F	-4
E2B	-5
E2E	-6
E2F	-7

			QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		32	1021204-007	CONTACT
			☒		31	1008456	WIRING DIAGRAM
			AR		30	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE DS TYPE
			1		28	1015758	WIRE LIST AA
			1		27	1021237	WIRING HARNESS E
			1		26	1015757	WIRING HARNESS D
			1		25	1015756	WIRING HARNESS C
			1		24	1015755	WIRING HARNESS B
			1		23	1015754	WIRING HARNESS A
			1		22	1007092	BUFFER RESISTOR MODULE ASSY
			19		21	MS171433	PIN, SPRING
			4		20	MS 21045 C 04	NUT SELF-LOCKING HEX
			4		19	MS-16995-11	SCREW, CAP, SOCKET HEAD
			3		18	MS 16995-10	SCREW, CAP, SOCKET HEAD
			19		17	1008095	SCREW, JACK
			19		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			38		14	1004206	WASHER THRUST
			1		13	1008098	SCREW SOCKET HEAD
			1		12	1001317	RETAINER, JACK SCREW
			2		11	1010620-2	PIN GUIDE
			12		10	1010620-1	PIN GUIDE
			1		9	1010622-2	CONNECTOR RECEPTACLE
			1		8	1010622-1	CONNECTOR RECEPTACLE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT WRAPOST MALE MIN
			60		5	1010383-1	INSULATOR WRAPOST MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONNECTOR
			143		3	1006781-2	CONTACT WRAPOST FEMALE MIN
			143		2	1006774	INSULATOR WRAPOST FEMALE MIN
			1		1	1008527	FRAME

LIST OF PARTS AND MATERIALS

1021227-011	1021207-011	
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS +.02 -.02 ANGLES +1° -1°
DO NOT SCALE THIS DRAWING
MATERIAL ——
CONTRACT NAS-9-497

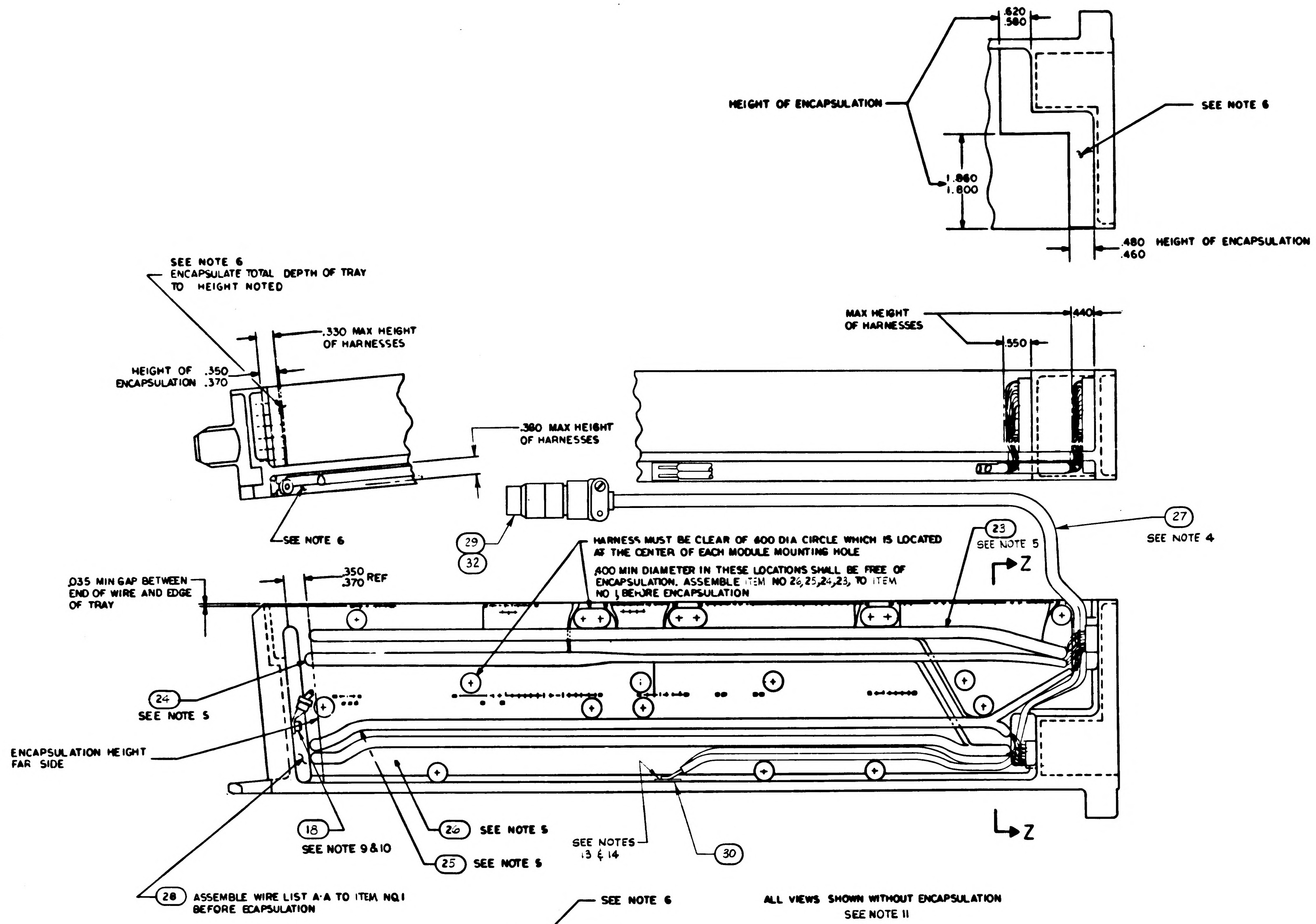
AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN DATE 2 June 64
CHECKED 5 Jun 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL 7/1/64
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBLY
TRAY 7

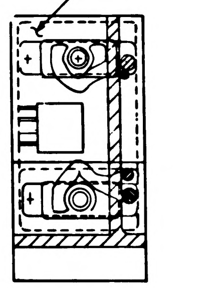
CODE IDENT NO
SIZE E
1021217
SCALE 1/1
SHEET 2 OF 2

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	3 64	
B	REVISED PER TDRR 13	3-FEB -65	

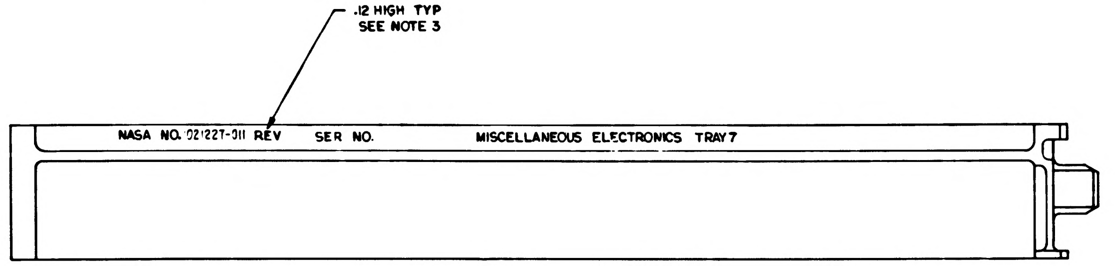


.620
.580
HEIGHT OF ENCAPSULATION
SEE NOTE 6
1.860
1.800
.480
.460
HEIGHT OF ENCAPSULATION
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY
TO HEIGHT NOTED
.330 MAX HEIGHT
OF HARNESSES
HEIGHT OF ENCAPSULATION .350 .370
.380 MAX HEIGHT
OF HARNESSES
SEE NOTE 6
MAX HEIGHT
OF HARNESSES
.550
.440
29
32
HARNESS MUST BE CLEAR OF .600 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.600 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 26,25,24,23, TO ITEM NO 1 BEFORE ENCAPSULATION
23
SEE NOTE 5
27
SEE NOTE 4
Z
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
24
SEE NOTE 5
ENCAPSULATION HEIGHT FAR SIDE
18
SEE NOTE 9 & 10
26
SEE NOTE 5
25
SEE NOTE 5
SEE NOTES 13 & 14
30
Z
28
ASSEMBLE WIRE LIST A-A TO ITEM NO.1 BEFORE ECAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z



.12 HIGH TYP
SEE NOTE 3
NASA NO. 021227-011 REV
SER NO.
MISCELLANEOUS ELECTRONICS TRAY 7

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

1021227-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN John L. Kudarauskas DATE 3 JUNE 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

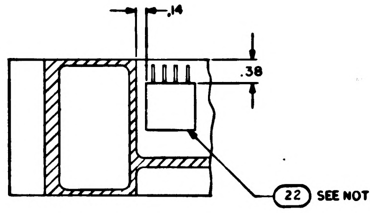
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021217
SCALE FULL
WT
SHEET 2 OF 2

1021217 B

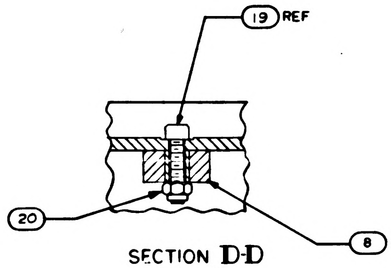
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

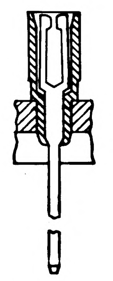
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	J.K.
B	REVISED PER TDRR 166-3	23 FEB 65	
C	REVISED PER TDRR 16980	10 MAR 65	J J J



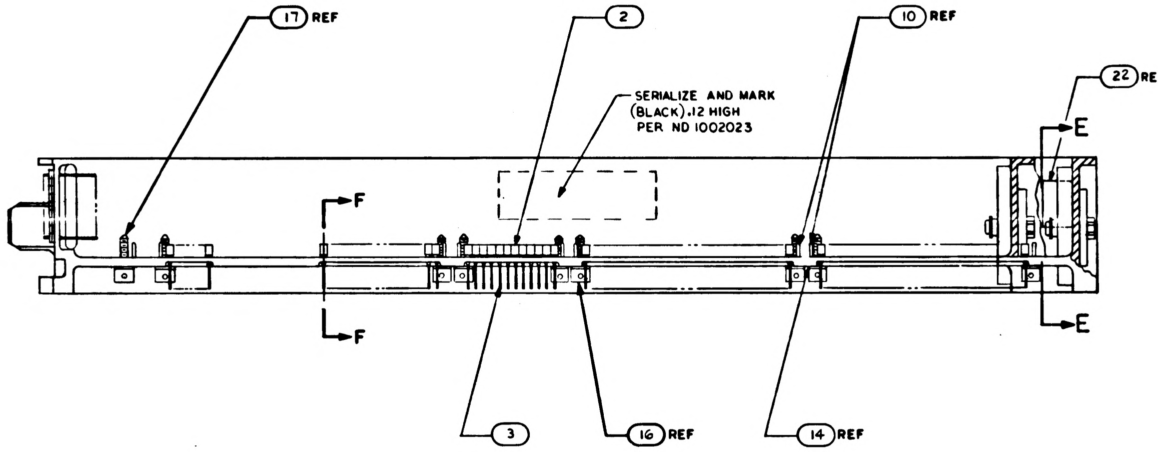
PARTIAL SECTION E-E

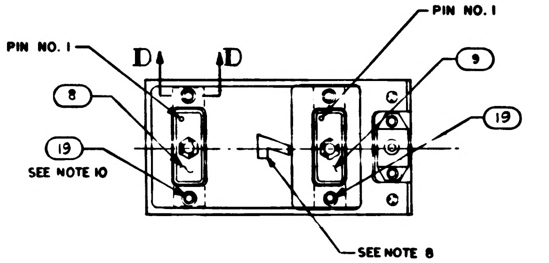


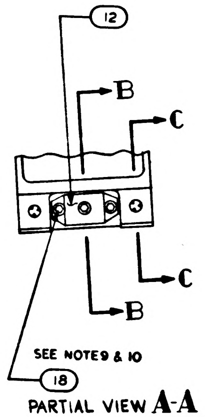
SECTION D-D
SCALE 2/1



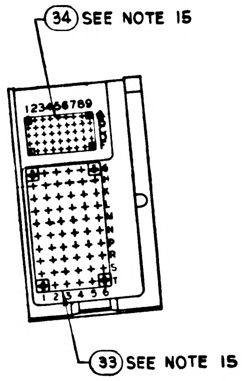
PARTIAL SECTION F-F
143 PLACES

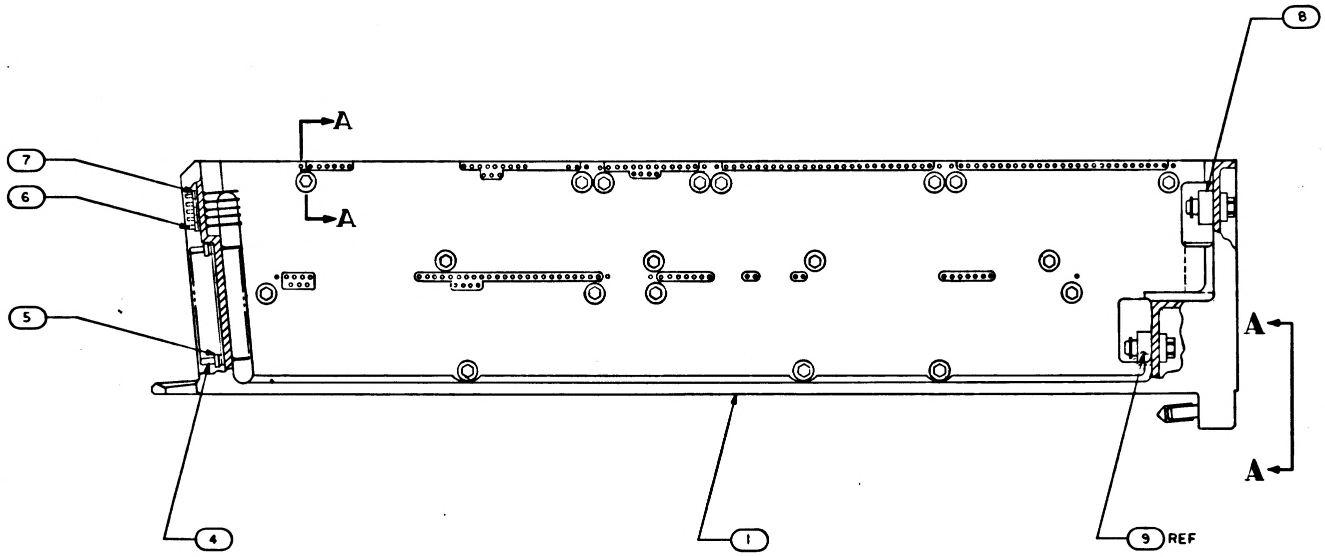






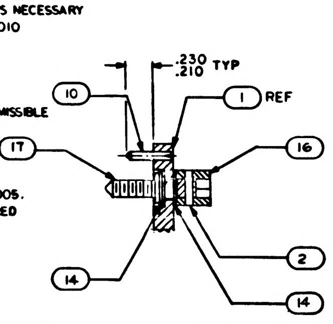
PARTIAL VIEW A-A



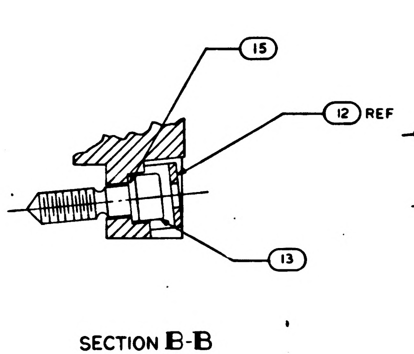


NOTES:

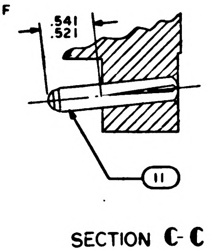
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NO.22 TO ITEM NO.1 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND NASA DWG 1010686
5. BOND ITEM NUMBERS 23, 24, 25, 26, 27 & 28 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO.22
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
11. ALL NICKEL WIRE HARNESS TERMINATION TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT
12. PROCURE PER PS1007147
13. PRIOR TO INSTALLATION OF ITEM NO. 27 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND 1002004 TYPE 1.
15. BOND ITEM NUMBERS 33 AND 34 TO ITEM NUMBERS 5 AND 7 PER ND 1002237.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART

FROM	TO
45A7 E9	45A7J1-35
E10	-2
E11	-1
E12	-14
E13	-7
E14	-20
E15	-27
E22	-22
E23	-38
COND E1B	45A7J9-2
E1E	-3
E1F	-4
E2B	-5
E2E	-6
E2F	-7

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		34	1008553	GASKET
			1		33	1008552	GASKET
			1		32	1021204-007	CONTACT
			☒		31	1008456	WIRING DIAGRAM
			AR		30	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE DS TYPE
			1		28	1015758	WIRE LIST AA
			1		27	1021237	WIRING HARNESS E
			1		26	1015757	WIRING HARNESS D
			1		25	1015756	WIRING HARNESS C
			1		24	1015755	WIRING HARNESS B
			1		23	1015754	WIRING HARNESS A
			1		22	1007092	BUFFER RESISTOR MODULE ASSY
			19		21	MS171433	PIN, SPRING
			4		20	MS 21045 C 04	NUT, SELF-LOCKING HEX
			4		19	MS-16995-11	SCREW, CAP, SOCKET HEAD
			3		18	MS 16995-10	SCREW, CAP, SOCKET HEAD
			19		17	1008095	SCREW, JACK
			19		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			38		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			1		12	1001317	RETAINER, JACK SCREW
			2		11	1010620-2	PIN GUIDE
			12		10	1010620-1	PIN GUIDE
			1		9	1010622-2	CONNECTOR, RECEPTACLE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			143		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			143		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008527	FRAME
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021227-011	1021207-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
-	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS-9-497

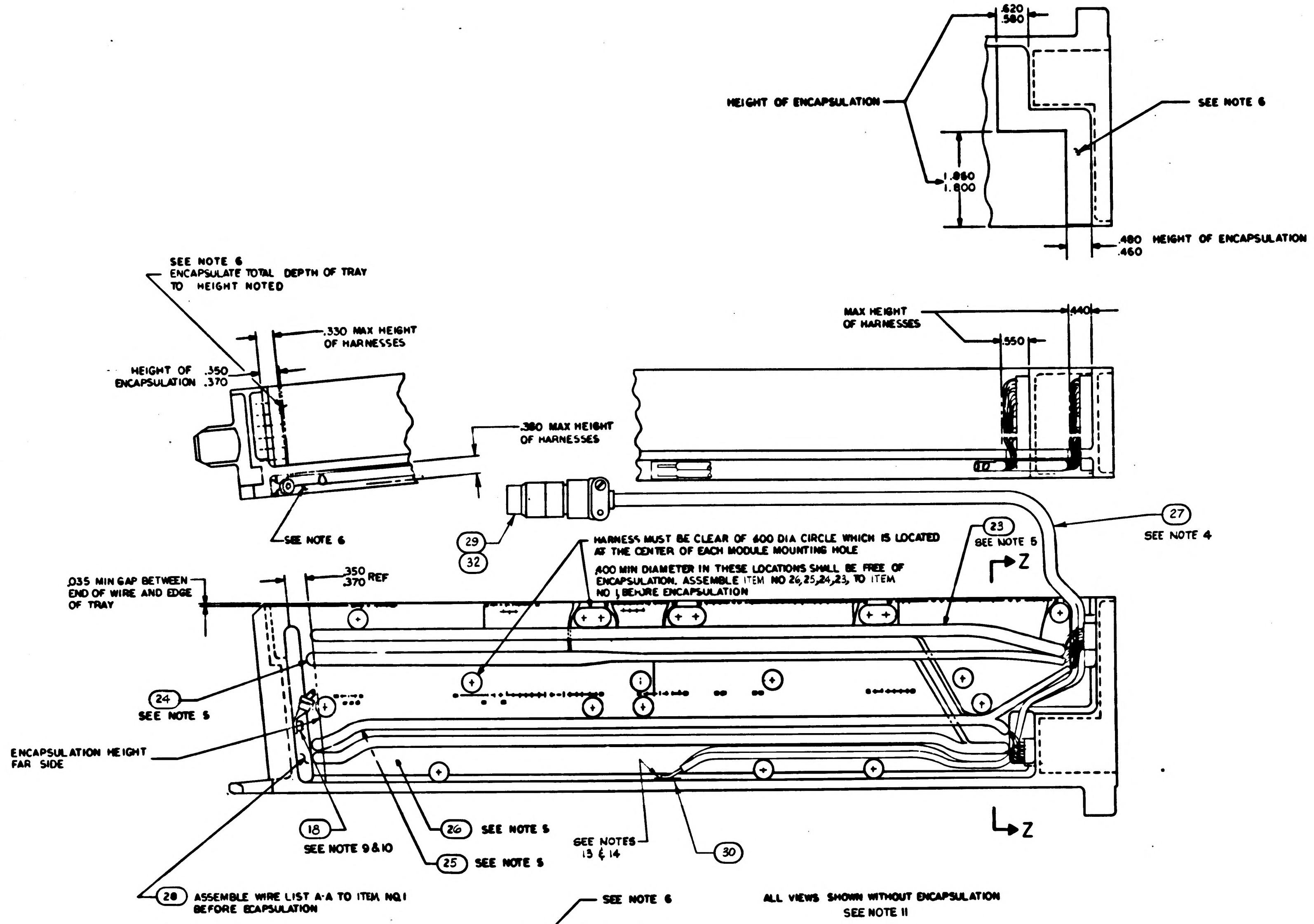
AC SPARK PLUG DIVISION. GMC
MILWAUKEE. WISCONSIN
ACSP PN
DRAWN [illegible] 2 June 64 DATE
CHECKED [illegible] 5 Jun 64
APPROVAL [illegible] 6/5/64
APPROVAL [illegible]
NASA APPROVAL [illegible] 7/6/64
MIT APPROVAL [illegible]

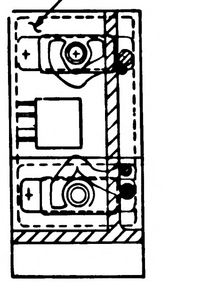
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

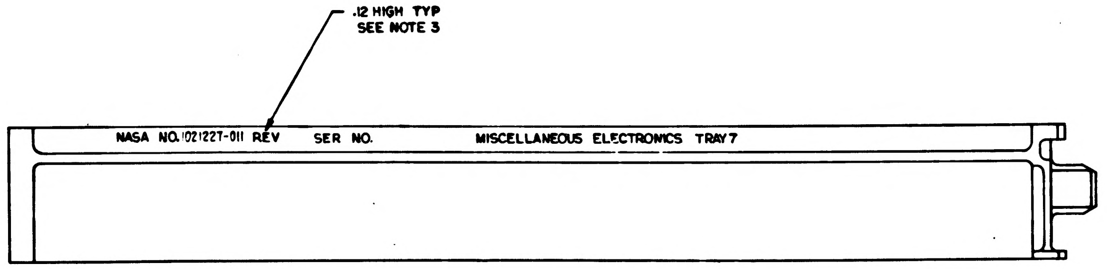
CODE IDENT NO
SIZE E
1021217
SCALE 1/1
SHEET 1 OF 2

	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	3 NOV 64	J.A.
B	REVISED PER TDRR 16043	FEB 65	
C	REVISED PER TDRR 16980	MAR 65	J J J


HEIGHT OF ENCAPSULATION
.620
.580
SEE NOTE 6
1.860
1.800
.480
.460
HEIGHT OF ENCAPSULATION
MAX HEIGHT OF HARNESSES
.440
.550
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.330 MAX HEIGHT OF HARNESSES
HEIGHT OF ENCAPSULATION .350 .370
.380 MAX HEIGHT OF HARNESSES
SEE NOTE 6
29
32
27
SEE NOTE 4
23
SEE NOTE 5
Z
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 26,25,24,23, TO ITEM NO 1 BEFORE ENCAPSULATION
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
24
SEE NOTE 5
ENCAPSULATION HEIGHT FAR SIDE
18
SEE NOTE 9 & 10
26
SEE NOTE 5
25
SEE NOTE 5
SEE NOTES 13 & 14
30
Z
28
ASSEMBLE WIRE LIST A-A TO ITEM NO.1 BEFORE ECAPSULATION
SEE NOTE 6
ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021227-011 REV
SER NO.
MISCELLANEOUS ELECTRONICS TRAY 7

MARKING VIEW AFTER ENCAPSULATION

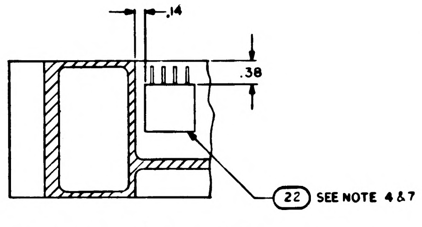
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

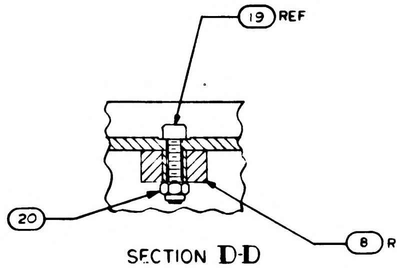
1021227-011	1021207-011	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	MATERIAL	DRAWN DATE 3 June 64 CHECKED 5 JUL 64 APPROVAL 7/15/64 APPROVAL 6 Jun 64 6 Jul 64	FRAME ASSEMBLY TRAY 7
APPLICATION		HEAT TREATMENT FINAL FINISH	NASA APPROVAL 7/14/64 MIT APPROVAL	CODE IDENT NO. SIZE E NASA DRAWING NO. 1021217 SCALE FULL WT SHEET 2 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

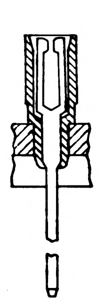
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	
B	REVISED PER TDRR 166-3	26 FEB 65	
C	REVISED PER TDRR 16980	15 MAR 65	
D	REVISED PER TDRR 20118	21 [illegible]	



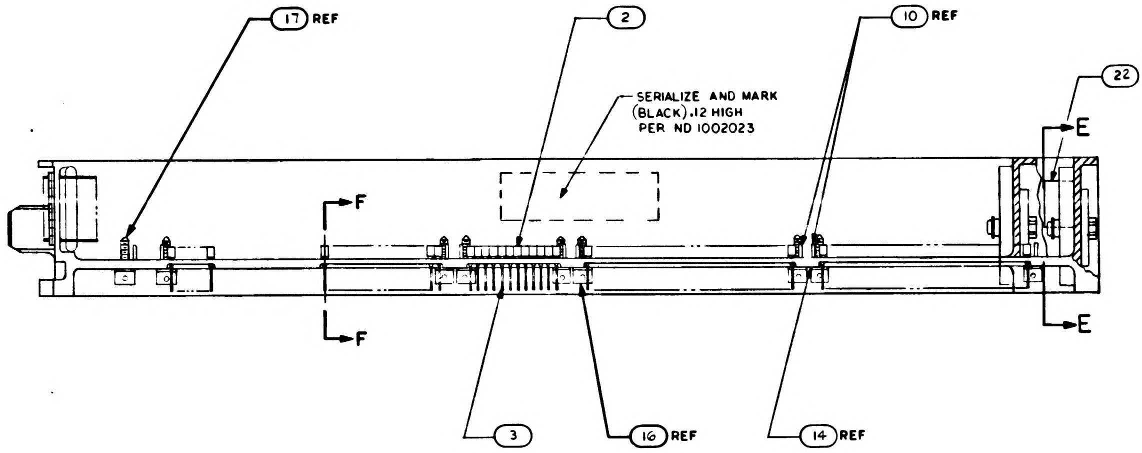
PARTIAL SECTION E-E

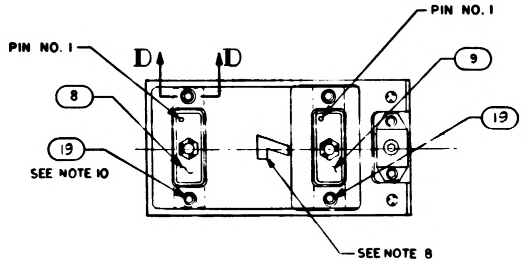


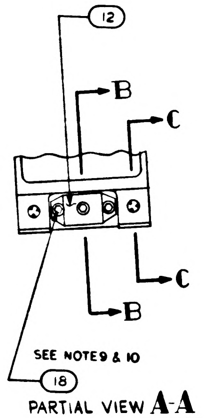
SECTION D-D
SCALE 2/1



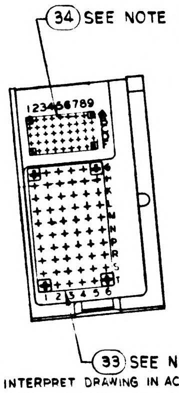
PARTIAL SECTION F-F
143 PLACES

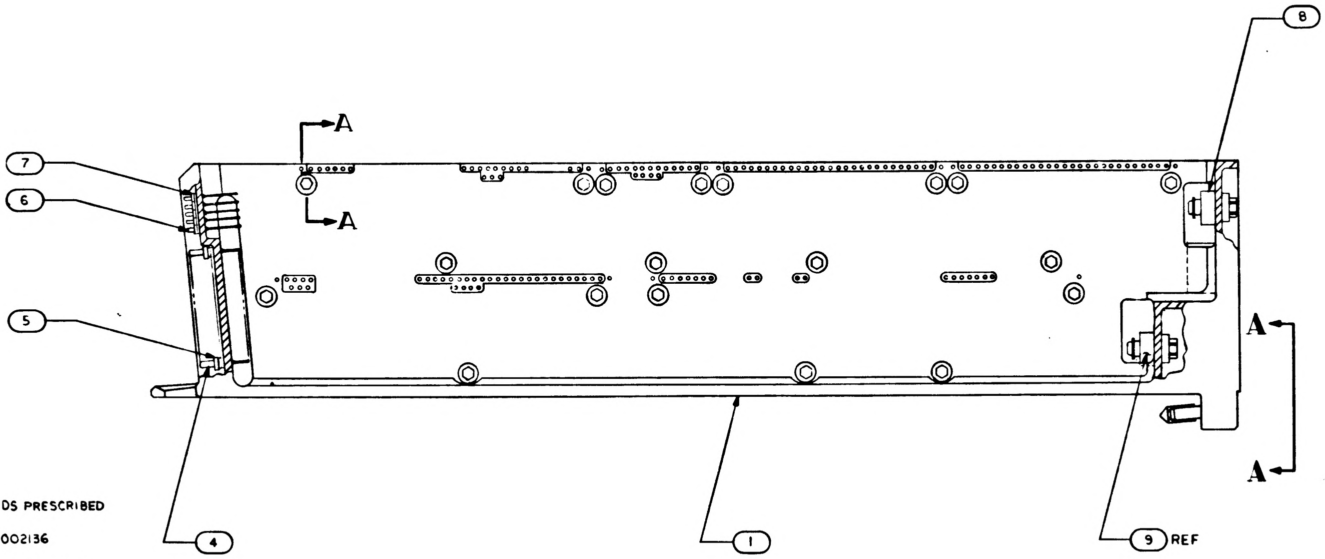






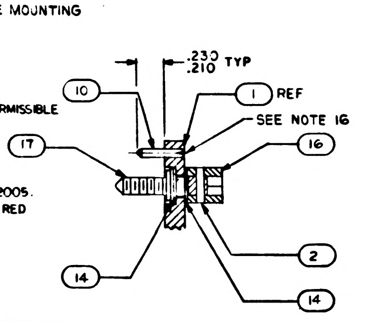
PARTIAL VIEW A-A



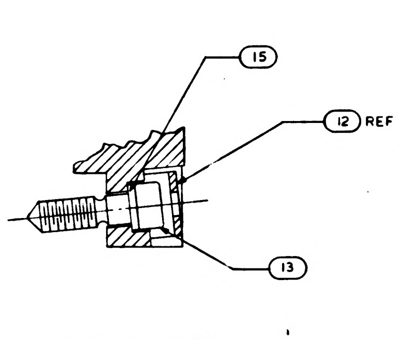


NOTES:

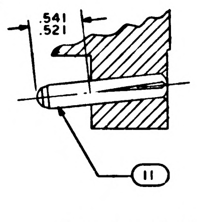
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2, 3, 4, 5, 6 AND 7 PER ND 1002136
3. MARK PER ND 1002019.
4. BOND ITEM NO. 22 TO ITEM NO. 1 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND NASA DWG 1010686.
5. BOND ITEM NUMBERS 23, 24, 25, 26, 27 & 28 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 22
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO. 18 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO. 1 TO BE 5.0/5.5 IN LB
11. ALL NICKEL WIRE HARNESS TERMINATION TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT
12. PROCURE PER PS1007147
13. PRIOR TO INSTALLATION OF ITEM NO. 27 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND 1002004 TYPE 1.
15. BOND ITEM NUMBERS 33 AND 34 TO ITEM NUMBERS 5 AND 7 PER ND 1002237.
16. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER GUIDE PIN INSERTION) USING TYPE 1 ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
17. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A7 E9	45A7J1-35
E10	-2
E11	-1
E12	-14
E13	-7
E14	-20
E15	-27
E22	-22
E23	-38
COND E1B	45A7J9-2
E1E	-3
E1F	-4
E2B	-5
E2E	-6
E2F	-7

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		34	1008553	GASKET
			1		33	1008552	GASKET
			1		32	1021204-007	CONTACT
			X		31	1008456	WIRING DIAGRAM
			AR		30	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE DS TYPE
			1		28	1015758	WIRE LIST AA
			1		27	1021237	WIRING HARNESS E
			1		26	1015757	WIRING HARNESS D
			1		25	1015756	WIRING HARNESS C
			1		24	1015755	WIRING HARNESS B
			1		23	1015754	WIRING HARNESS A
			1		22	1007092	BUFFER RESISTOR MODULE ASSY
			19		21	MS171433	PIN, SPRING
			4		20	MS 21045 C 04	NUT SELF-LOCKING HEX
			4		19	MS-16995-11	SCREW, CAP, SOCKET HEAD
			3		18	MS 16995-10	SCREW, CAP, SOCKET HEAD
			19		17	1008095	SCREW, JACK
			19		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			38		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			1		12	1001317	RETAINER, JACK SCREW
			2		11	1010620-2	PIN GUIDE
			12		10	MS16556-604	PIN, GUIDE
			1		9	1010622-2	CONNECTOR RECEPTACLE
			1		8	1010622-1	CONNECTOR RECEPTACLE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			143		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			143		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008527	FRAME

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021227-011	1021207-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ +.02 +1°
− −.02 −1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE [illegible] 64
CHECKED [illegible] 5 [illegible] 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

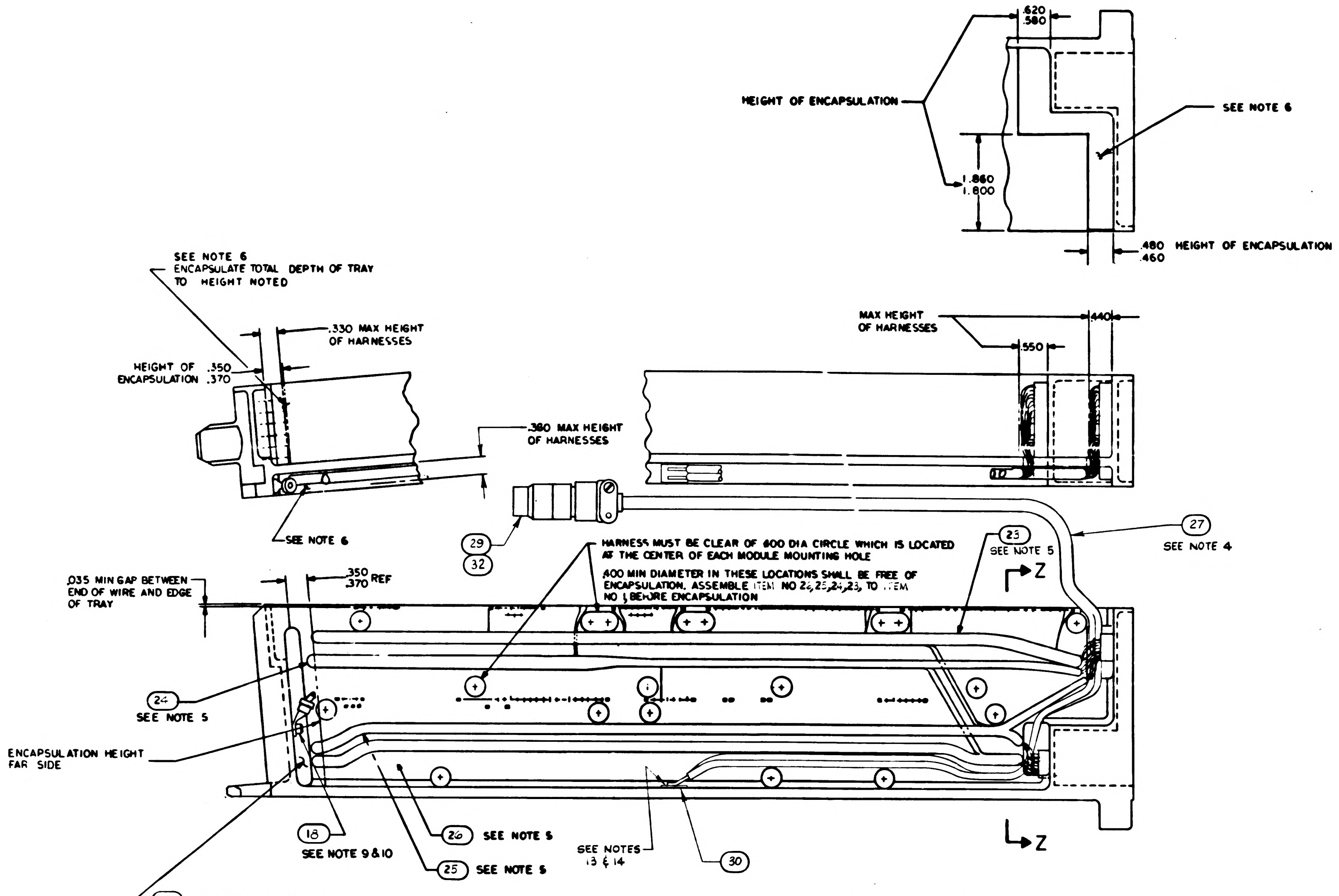
MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBLY
TRAY 7

CODE IDENT NO 80230
SIZE E
1021217
SCALE 1/1
SHEET 1 OF 2

[illegible]

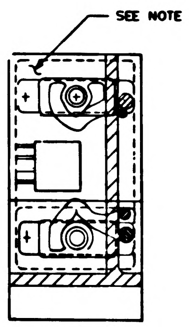
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	5 NOV 64	
B	REVISED PER TDRR 16643	26 FEB -65	
C	REVISED PER TDRR 16980	10 MAR 65	
D	REVISION STATUS CHANGED	21 JUN 65	JJ



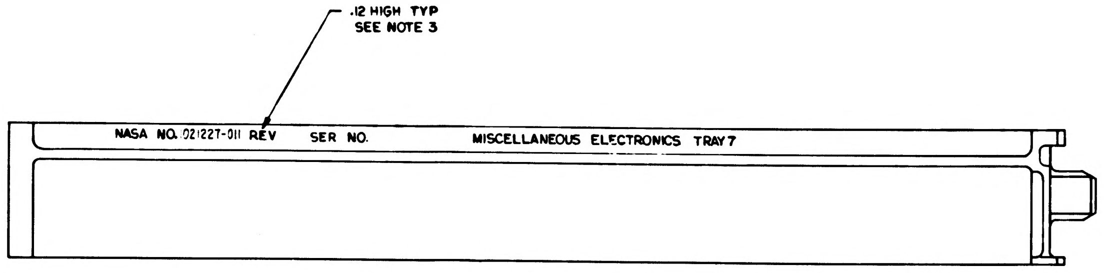
HEIGHT OF ENCAPSULATION
.620
.580
SEE NOTE 6
1.860
1.800
.480 HEIGHT OF ENCAPSULATION
.460
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY
TO HEIGHT NOTED
.330 MAX HEIGHT
OF HARNESSES
HEIGHT OF ENCAPSULATION .350 .370
MAX HEIGHT
OF HARNESSES
.440
.550
.380 MAX HEIGHT
OF HARNESSES
SEE NOTE 6
29
32
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 26,25,24,23, TO ITEM NO 1 BEFORE ENCAPSULATION
23
SEE NOTE 5
27
SEE NOTE 4
Z
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
24
SEE NOTE 5
ENCAPSULATION HEIGHT
FAR SIDE
18
SEE NOTE 9 & 10
26 SEE NOTE 5
25 SEE NOTE 5
SEE NOTES 13 & 14
30
Z

28 ASSEMBLE WIRE LIST A-A TO ITEM NO.1 BEFORE ECAPSULATION

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z



.12 HIGH TYP
SEE NOTE 3
NASA NO. 021227-011 REV
SER NO.
MISCELLANEOUS ELECTRONICS TRAY 7

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021227-011	1021207-0..

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN DATE 3 JUNE 64
CHECKED
APPROVAL 6/5/64
APPROVAL 8 JUNE 64
NASA APPROVAL 7/1/64
MIT APPROVAL

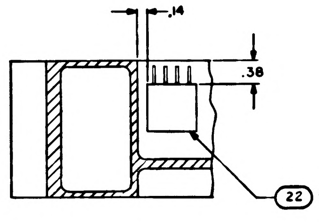
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

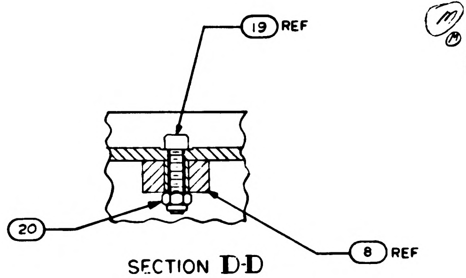
CODE IDENT NO 80230
SIZE E
NASA DRAWING NO. 1021217
SCALE FULL
WT
SHEET 2 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

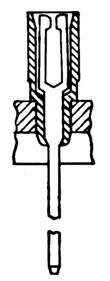
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	[illegible]
B	REVISED PER TDRR 16643	26 FEB [illegible]	[illegible]
C	REVISED PER TDRR 16980	13 MAR 65	[illegible]
D	REVISED PER TDRR 20118	21 [illegible] 65	[illegible]
E	REVISED PER TDRR 20[illegible]	[illegible]	MCR



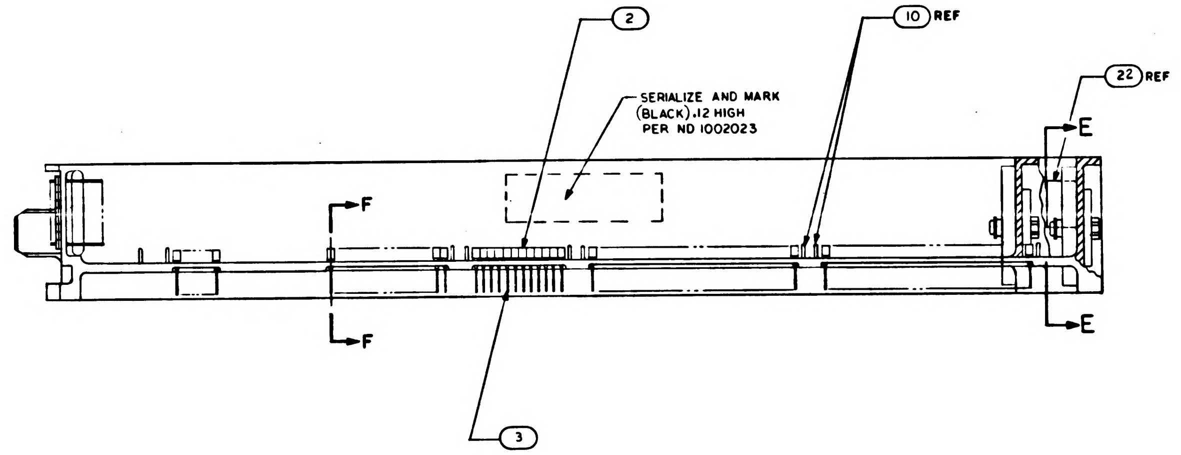
PARTIAL SECTION E-E

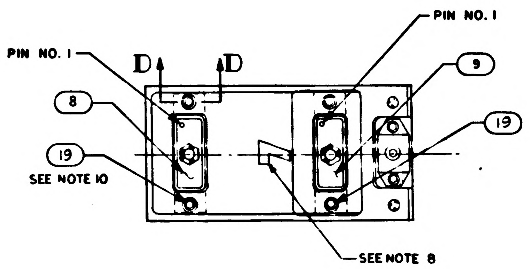


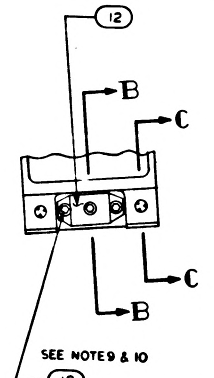
SECTION D-D
SCALE 2/1



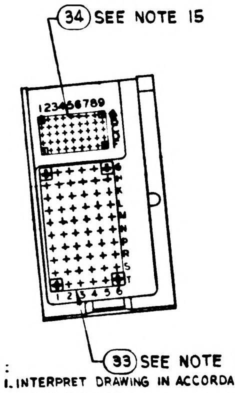
PARTIAL SECTION F-F
143 PLACES

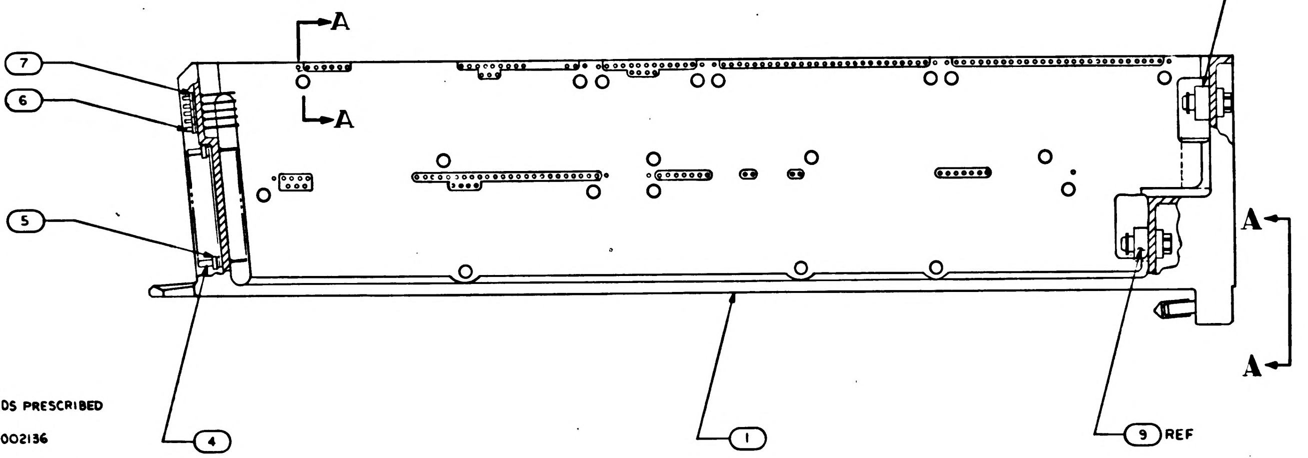






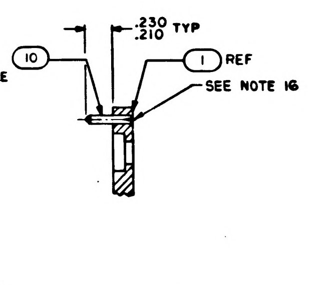
PARTIAL VIEW A-A



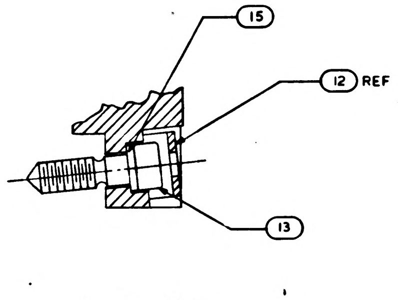


NOTES:

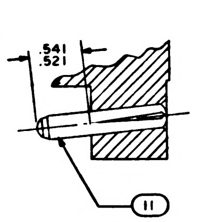
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019.
4. BOND ITEM NO.22 TO ITEM NO.1 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND NASA DWG 1010686.
5. BOND ITEM NUMBERS 23, 24, 25, 26, 27 & 28 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND 1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO.22
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
11. ALL NICKEL WIRE HARNESS TERMINATION TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT
12. PROCURE PER PS1007147
13. PRIOR TO INSTALLATION OF ITEM NO. 27 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND 1002004 TYPE 1.
15. BOND ITEM NUMBERS 33 AND 34 TO ITEM NUMBERS 5 AND 7 PER ND 1002237.
16. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
17. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A7 E 9	45A7J1—35
E 10	—2
E 11	—1
E 12	—14
E 13	—7
E 14	—20
E 15	—27
E 22	—22
E 23	—38
COND E1B	45 A7 J9 - 2
E1E	- 3
E1F	- 4
E2B	- 5
E2E	- 6
E2F	- 7

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		34	1008553	GASKET
			1		33	1008552	GASKET
			1		32	1021204-007	CONTACT
			X		31	1008455	WIRING DIAGRAM
			AR		30	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5, .38 WIDE
			1		29	1021205-001	RECEPTACLE DS TYPE
			1		28	1015758	WIRE LIST AA
			1		27	1021237	WIRING HARNESS E
			1		26	1015757	WIRING HARNESS D
			1		25	1015756	WIRING HARNESS C
			1		24	1015755	WIRING HARNESS B
			1		23	1015754	WIRING HARNESS A
			1		22	1007092	BUFFER RESISTOR MODULE ASSY
			~~19~~		~~21~~	~~MS171433~~	~~PIN, SPRING~~
			4		20	MS 21045 C 04	NUT, SELF-LOCKING HEX
			4		19	MS-16995-11	SCREW, CAP, SOCKET HEAD
			3		18	MS 16995-10	SCREW, CAP, SOCKET HEAD
			~~19~~		~~17~~	~~1008095~~	~~SCREW, JACK~~
			~~19~~		~~16~~	~~1004207~~	~~DRIVE CYLINDER~~
			1		15	1008099-2	WASHER
			~~38~~		~~14~~	~~1004206~~	~~WASHER THRUST~~
			1		13	1008098	SCREW, SOCKET HEAD
			1		12	1001317	RETAINER, JACK SCREW
			2		11	1010620-2	PIN GUIDE
			12		10	MS16556-604	PIN GUIDE
			1		9	1010622-2	CONNECTOR, RECEPTACLE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT WRAPOST MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			143		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			143		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008527	FRAME

LIST OF PARTS AND MATERIALS

1021227-011	1021207-011	
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
-	-.02	-1°

DO NOT SCALE THIS DRAWING

MATERIAL —

CONTRACT NAS-9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN [illegible] DATE 2 [illegible] 64
CHECKED [illegible] 5 JUN 64
APPROVAL [illegible] 64
APPROVAL [illegible] JULY 64
NASA APPROVAL [illegible] 7/[illegible]/64
MIT APPROVAL [illegible]

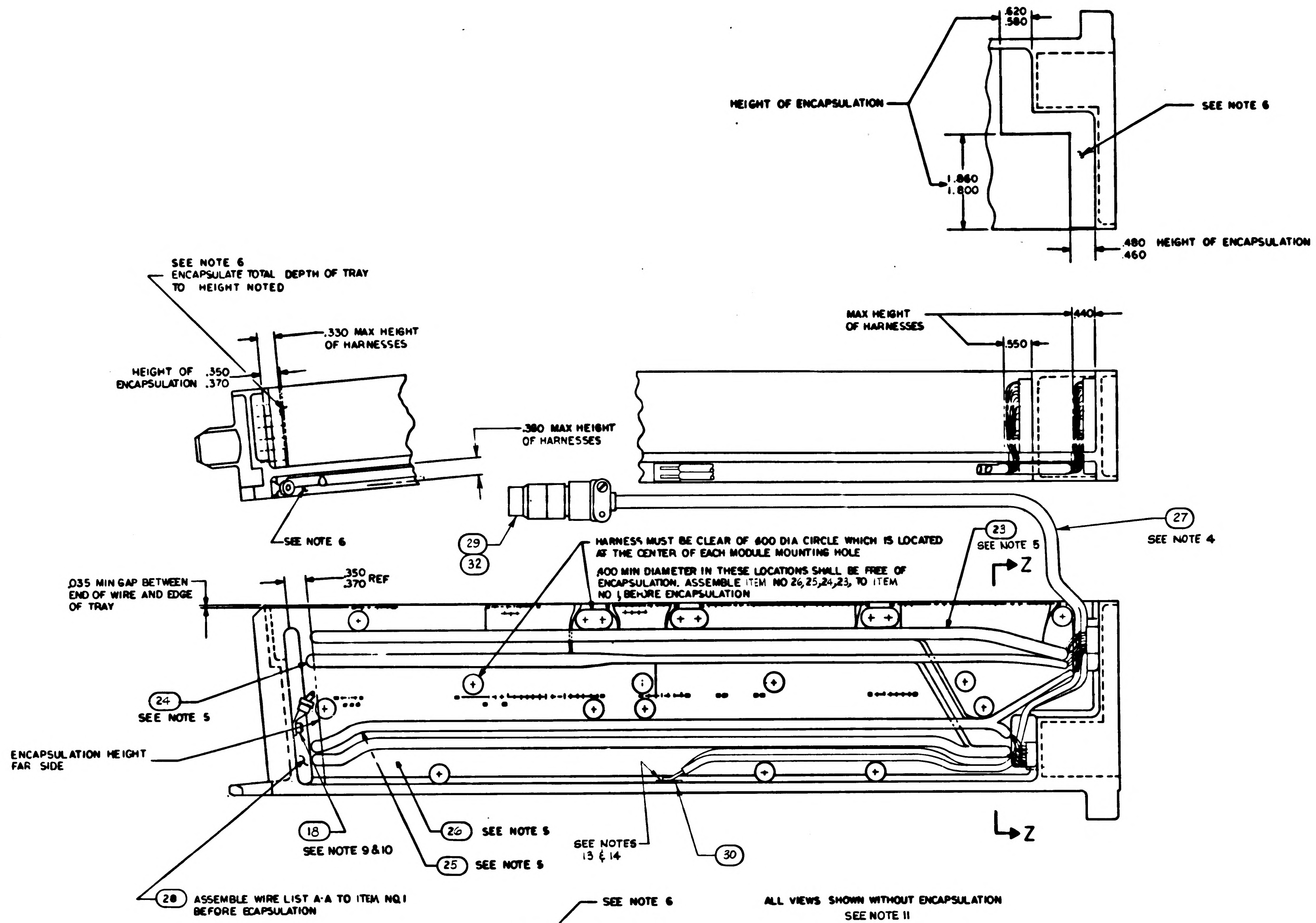
MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

FRAME ASSEMBLY
TRAY 7

CODE IDENT NO 80230
SIZE E
1021217
SCALE 1/1
SHEET 1 OF 2

[illegible]

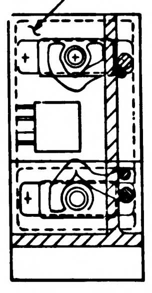
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	3 NOV 64	
B	REVISED PER TDRR 16643	23 FEB -65	
C	REVISED PER TDRR 16980	10 MAR 65	
D	REVISION STATUS CHANGED	21 JUN 65	JJ
E	REVISION STATUS CHANGED	1 JUL 65	



HEIGHT OF ENCAPSULATION
.620
.580
SEE NOTE 6
1.860
1.800
.480 HEIGHT OF ENCAPSULATION
.460
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.330 MAX HEIGHT OF HARNESSES
HEIGHT OF ENCAPSULATION .350 .370
.380 MAX HEIGHT OF HARNESSES
SEE NOTE 6
MAX HEIGHT OF HARNESSES
.440
.550
29
32
27
SEE NOTE 4
23
SEE NOTE 5
HARNESS MUST BE CLEAR OF .600 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.600 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 26,25,24,23, TO ITEM NO 1 BEFORE ENCAPSULATION
Z
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
24
SEE NOTE 5
ENCAPSULATION HEIGHT FAR SIDE
18
SEE NOTE 9 & 10
26 SEE NOTE 5
25 SEE NOTE 5
SEE NOTES 13 & 14
30
Z
28 ASSEMBLE WIRE LIST A-A TO ITEM NO.1 BEFORE ECAPSULATION

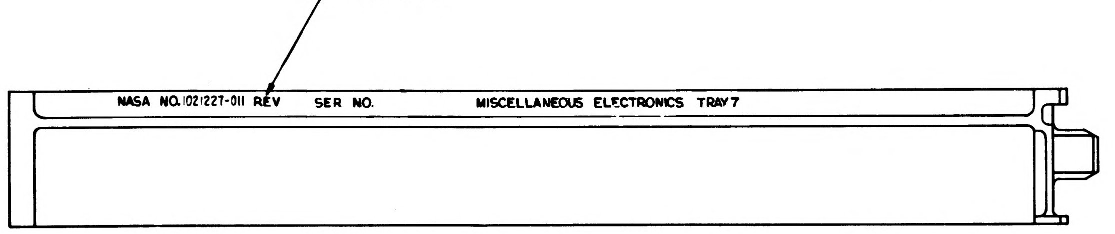
SEE NOTE 6

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z

.12 HIGH TYP
SEE NOTE 3



NASA NO.1021227-011 REV SER NO. MISCELLANEOUS ELECTRONICS TRAY 7

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

1021227-011	1021207-011
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN John A. Kudanh DATE 3 JUNE 64
CHECKED 5 JUNE 64
APPROVAL 6/5/64
APPROVAL 8 JUNE 64
NASA APPROVAL 7/1/64
MIT APPROVAL

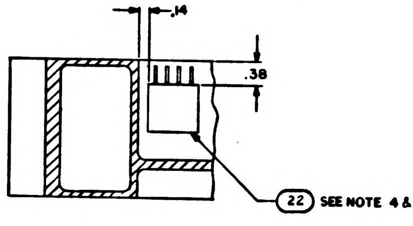
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

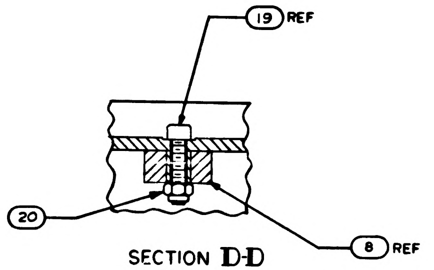
CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO. 1021217
SCALE FULL
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

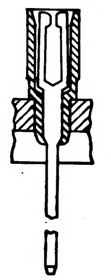
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL



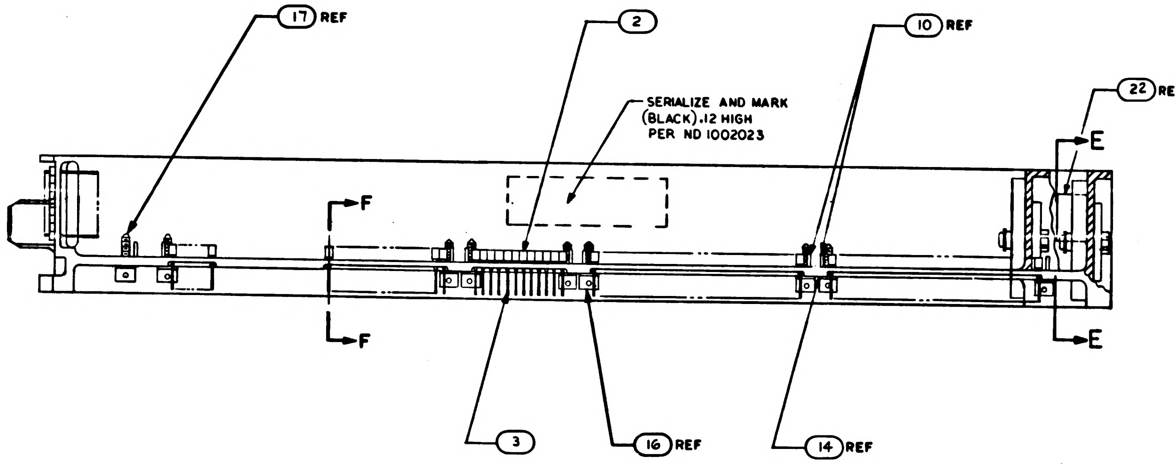
PARTIAL SECTION E-E

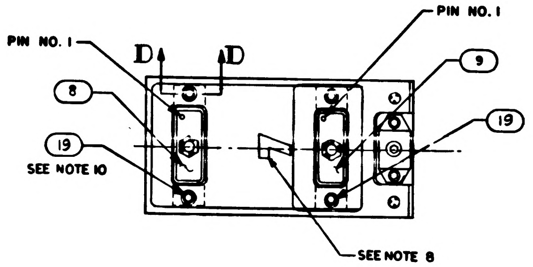


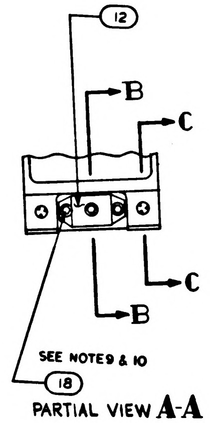
SECTION D-D
SCALE 2/1



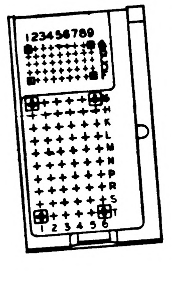
PARTIAL SECTION F-F
143 PLACES

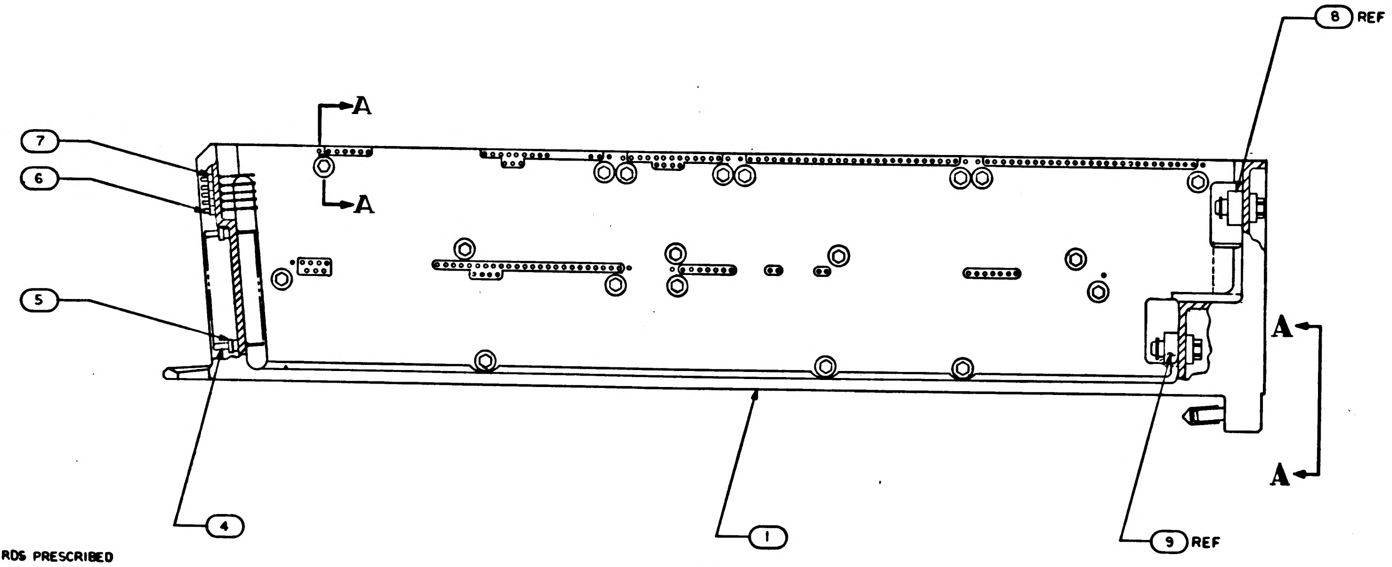






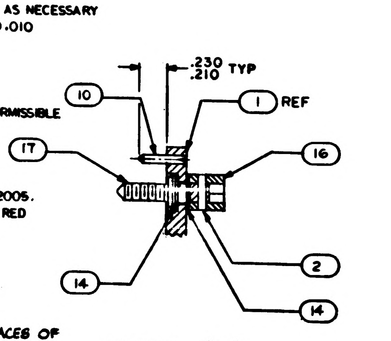
PARTIAL VIEW A-A



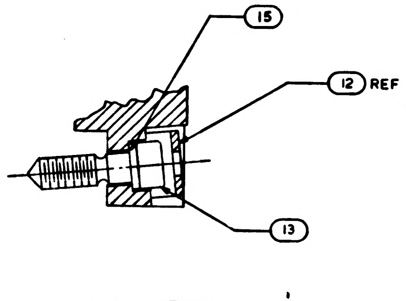


NOTES:

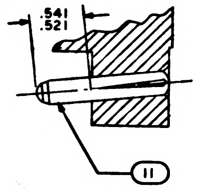
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NO.22 TO ITEM NO.1 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND NASA DWG 1010686
5. BOND ITEM NUMBERS 23, 24, 25, 26, 27 & 28 TO ITEM NO.1 PER ND 1002004 AS NECESSARY
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO.22
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
9. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
10. MOUNTING TORQUE FOR ITEM NOS.18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
11. ALL NICKEL WIRE HARNESS TERMINATION TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT
12. PROCURE PER PS1007147
13. PRIOR TO INSTALLATION OF ITEM NO. 27 COVER ITEM NO. 30 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
14. AFTER INSTALLATION OF ITEM NO. 27 COVER UNINSULATED SURFACES OF ITEM NO. 27 WITH ND 1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A7 E9	45A7J1-35
E10	-2
E11	-1
E12	-14
E13	-7
E14	-20
E15	-27
E22	-22
E23	-38
COND E1B	45A7J9-2
E1E	-3
E1F	-4
E2B	-5
E2E	-6
E2F	-7

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1		32	1021202-007	CONTACT
X		31	1010097	WIRING DIAGRAM
AR		30	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5, .38 WIDE
1		29	1021205-001	RECEPTACLE DS TYPE
1		28	1015758	WIRE LIST AA
1		27	1021237	WIRING HARNESS E
1		26	1015757	WIRING HARNESS D
1		25	1015756	WIRING HARNESS C
1		24	1015755	WIRING HARNESS B
1		23	1015754	WIRING HARNESS A
1		22	1007092	BUFFER RESISTOR MODULE ASSY
19		21	MS171433	PIN, SPRING
4		20	MS 21045 C 04	NUT, SELF-LOCKING HEX
4		19	MS-16995-11	SCREW, CAP, SOCKET HEAD
3		18	MS 16995-10	SCREW, CAP, SOCKET HEAD
19		17	1008095	SCREW, JACK
19		16	1004207	DRIVE CYLINDER
1		15	1008099-2	WASHER
38		14	1004206	WASHER THRUST
1		13	1008098	SCREW, SOCKET HEAD
1		12	1001317	RETAINER, JACK SCREW
2		11	1010620-2	PIN GUIDE
12		10	1010620-1	PIN, GUIDE
1		9	1010622-2	CONNECTOR, RECEPTACLE
1		8	1010622-1	CONNECTOR, RECEPTACLE
45		7	1006775	INSULATOR WRAPOST MALE MIN
45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
60		5	1010383-1	INSULATOR, WRAPOST, MALE
60		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
143		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
143		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
1		1	1008177	FRAME

LIST OF PARTS AND MATERIALS

1021227-011	1021207-011	
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
-	-.02	-1°

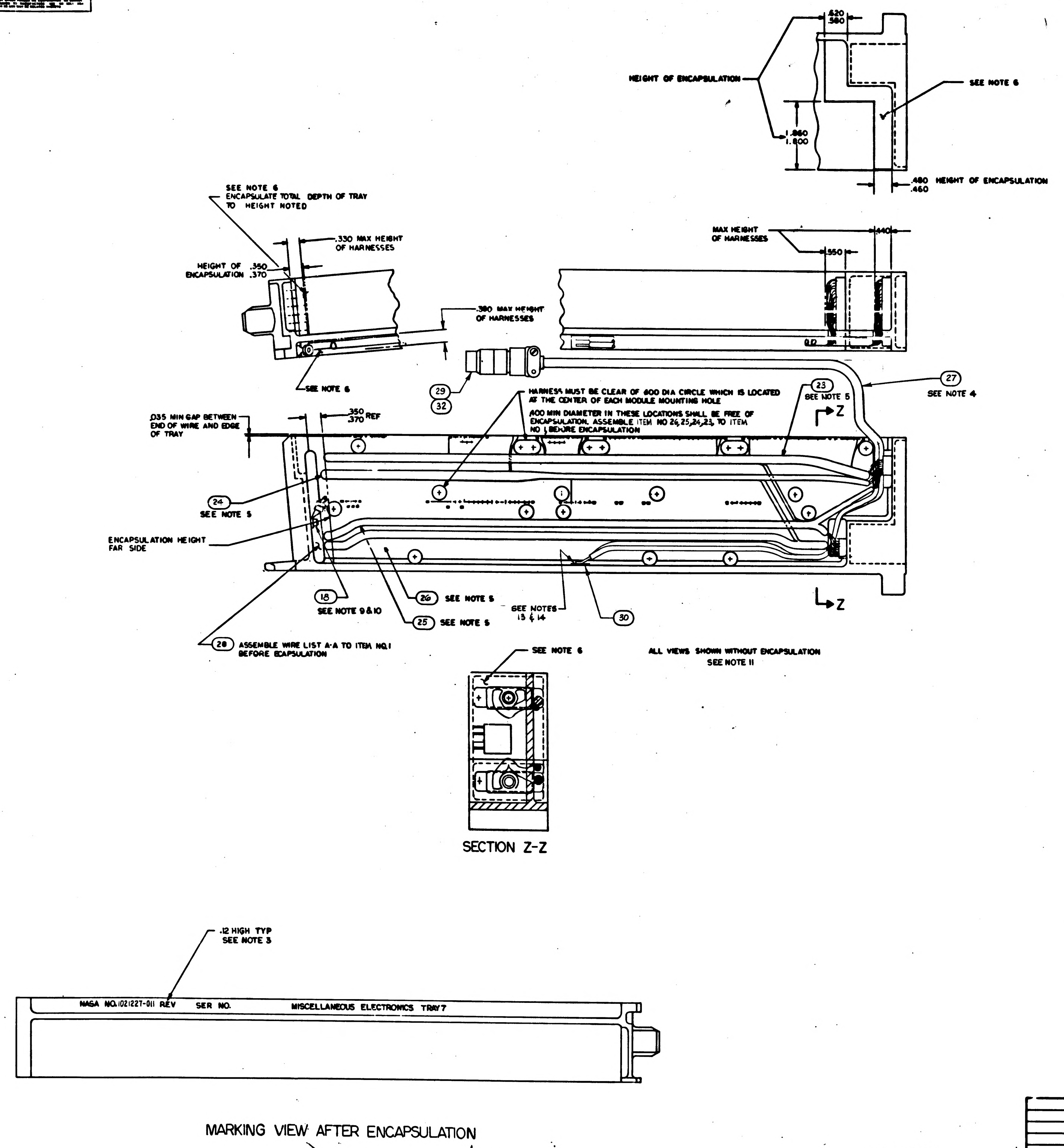
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS-9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN 2 June 64 DATE
CHECKED 5 Jun 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

CODE IDENT NO
SIZE E
1021217
SCALE 1/1
SHEET 1 OF 2


HEIGHT OF ENCAPSULATION
.420
.380
SEE NOTE 6
1.860
1.800
.480 HEIGHT OF ENCAPSULATION
.460
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY
TO HEIGHT NOTED
.330 MAX HEIGHT OF HARNESSES
HEIGHT OF ENCAPSULATION .350 .370
.380 MAX HEIGHT OF HARNESSES
MAX HEIGHT OF HARNESSES
.550
.440
SEE NOTE 6
29
32
HARNESS MUST BE CLEAR OF .600 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NO 26,25,24,23, TO ITEM NO 1 BEFORE ENCAPSULATION
23
SEE NOTE 5
27
SEE NOTE 4
Z
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
.350
.370 REF
24
SEE NOTE 5
ENCAPSULATION HEIGHT FAR SIDE
18
SEE NOTE 9 & 10
26 SEE NOTE 5
25 SEE NOTE 5
SEE NOTES 13 & 14
30
Z
28 ASSEMBLE WIRE LIST A-A TO ITEM NO.1 BEFORE ECAPSULATION
SEE NOTE 6
ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11
SECTION Z-Z
.12 HIGH TYP
SEE NOTE 3
NASA NO.1021227-011 REV SER NO. MISCELLANEOUS ELECTRONICS TRAY 7
MARKING VIEW AFTER ENCAPSULATION

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

1021227-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
Contract NAS 9-497
DRAWN J. A. Rosenkrantz DATE 3 Jun 64
CHECKED 5 JUN 64
APPROVED
APPROVED
NASA APPROVAL 7/14/64
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 7

SIZE E
1021217
SCALE FULL
SHEET 2 OF 2

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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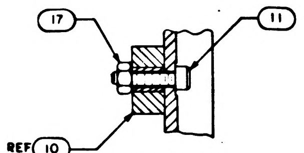
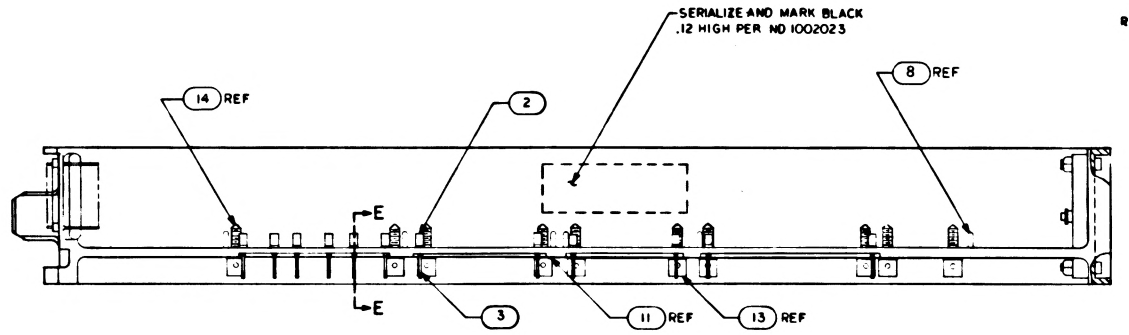
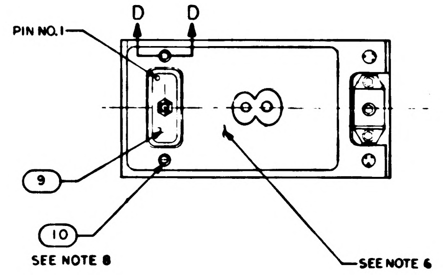
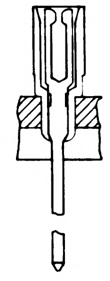


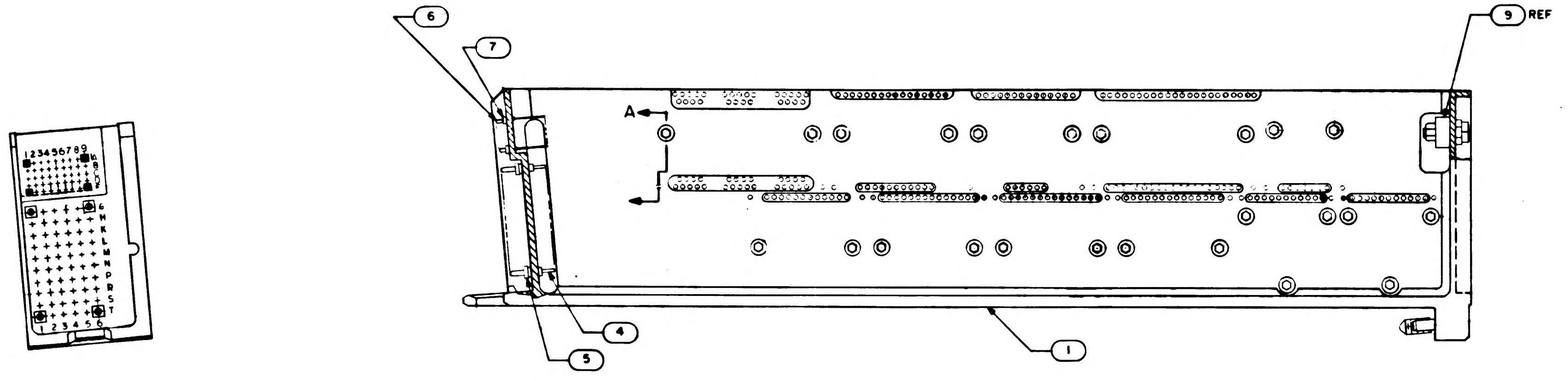
SECTION D-D
SCALE 2/1

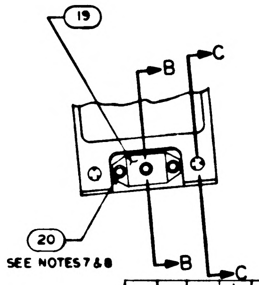


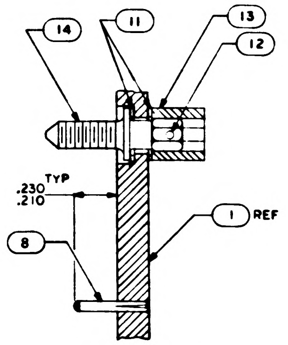




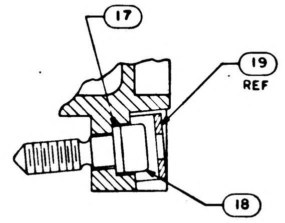
PARTIAL SECTION E-E
226 PLACES



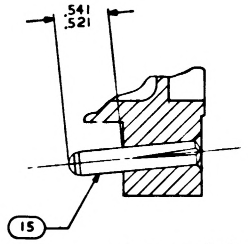




SECTION A-A
SCALE 3/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND F1B	45A3J13-2
F1E	-3
F1F	-4
F2B	-5
F2E	-6
F2F	-7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEMS NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136.
3. MARK PER ND 1002019 WHITE.
4. BOND ITEMS NO. 21,22,23,24,25,26 & 27 TO ITEMS NO. 1 PER ND 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR, EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO. 20 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEMS NO. 10 AND 20 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
   ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60
   ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT.
10. PROCURE PER PS 1007148.
11. PRIOR TO INSTALLATION OF ITEM NO 27 COVER ITEM NO 29 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM 27 COVER UNINSULATED SURFACES OF ITEM NO 27 WITH ND 1002004 TYPE 1.

			1		31	1021204-007	CONTACT
			X		30	1010230	WIRING DIAGRAM
			AR		29	MIL-I-15126	MYLAR TAPE, TYPE MFT 25 .38 WIDE
			1		28	1021205-001	RECEPTACLE, DS TYPE
			1		27	1021208	WIRING HARNESS F
			1		26	1015748	WIRE LIST AA
			1		25	1015747	WIRING HARNESS E
			1		24	1015746	WIRING HARNESS D
			1		23	1015745	WIRING HARNESS C
			1		22	1015744	WIRING HARNESS B
			1		21	1015743	WIRING HARNESS A
			3		20	MS16995-10	SCREW CAP SOCKET HEAD
			1		19	1001317	RETAINER, JACK SCREW
			1		18	1008098	SCREW, SOCKET HEAD
			1		17	1008099-2	WASHER
			2		16	MS 21045C04	NUT SELF-LOCKING HEX
			2		15	1010620-2	PIN, GUIDE
			24		14	1008095	SCREW, JACK
			24		13	1004207	DRIVE CYLINDER
			24		12	MS 171433	PIN, SPRING
			48		11	1004206	WASHER, THRUST
			2		10	MS16995-11	SCREW, CAP, SOCKET HEAD
			1		9	1010622-1	CONNECTOR RECEPTACLE
			22		8	1010620-1	PIN GUIDE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONN
			226		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			226		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008178	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021228-011	1021207-011	011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − —
DECIMALS +.02 −.02
ANGLES +1° −1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J Koracin DATE 3 JUN 64
CHECKED [illegible] 5 JUN 64
APPROVAL [illegible] 6/5/64
APPROVAL [illegible] 8 JUN 64
NASA APPROVAL [illegible] 7/14/64
MIT APPROVAL [illegible]

MANNED
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HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

CODE IDENT NO.
SIZE E 1021218
SCALE 1/1
SHEET 1 OF 2

1021218

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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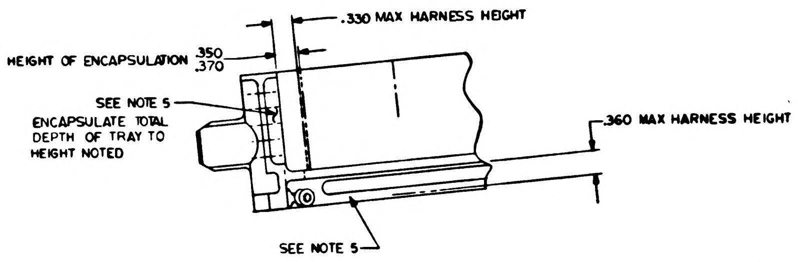
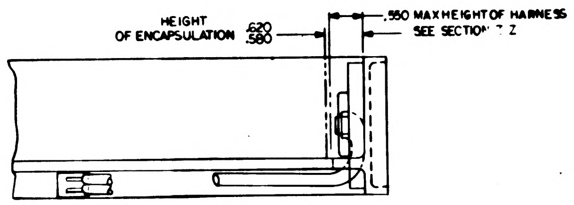
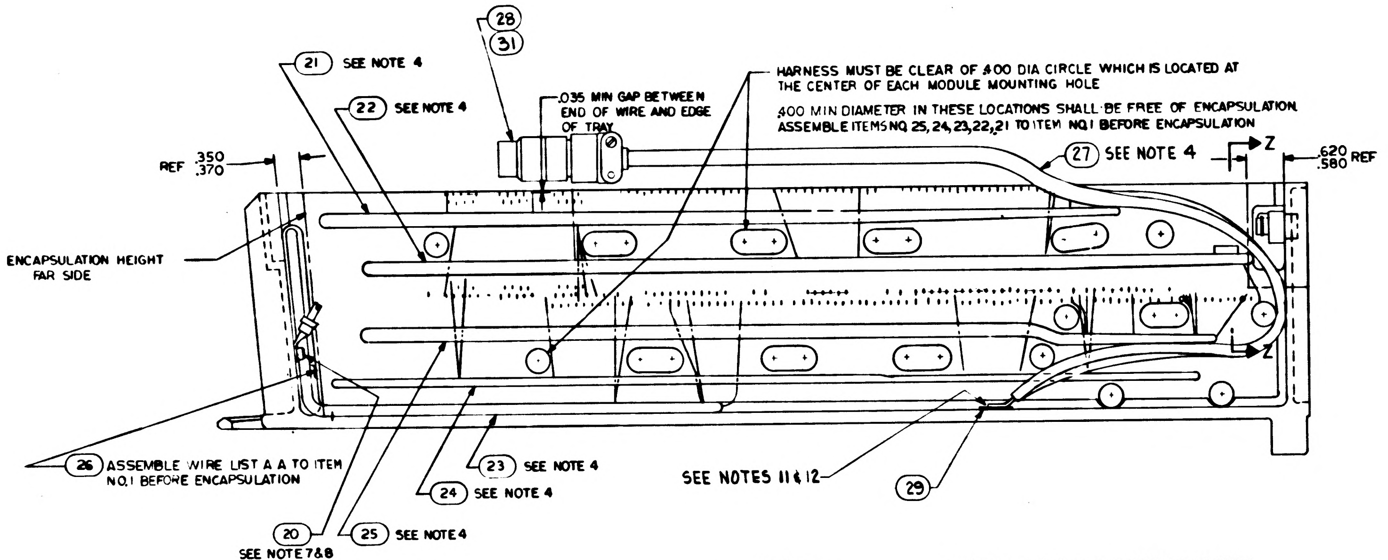
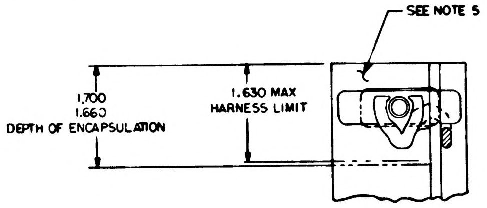

.330 MAX HARNESS HEIGHT
HEIGHT OF ENCAPSULATION .350 .370
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

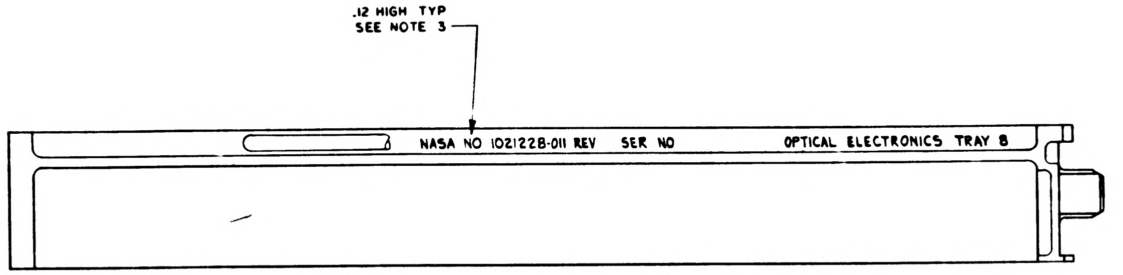

HEIGHT OF ENCAPSULATION .620 .580
.550 MAX HEIGHT OF HARNESS SEE SECTION Z Z


28
31
21 SEE NOTE 4
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION
ASSEMBLE ITEMS NO. 25, 24, 23, 22, 21 TO ITEM NO.1 BEFORE ENCAPSULATION
REF .350 .370
27 SEE NOTE 4
Z
.620 .580 REF
ENCAPSULATION HEIGHT FAR SIDE
Z
26 ASSEMBLE WIRE LIST A A TO ITEM NO.1 BEFORE ENCAPSULATION
23 SEE NOTE 4
24 SEE NOTE 4
SEE NOTES 11 & 12
29
20 SEE NOTE 7&8
25 SEE NOTE 4

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700
1.660
DEPTH OF ENCAPSULATION
1.630 MAX
HARNESS LIMIT

PARTIAL SECTION Z - Z


.12 HIGH TYP
SEE NOTE 3
NASA NO 1021228-011 REV SER NO
OPTICAL ELECTRONICS TRAY 8

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021228-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
Cambridge Mass
Contract NAS 9-497
DRAWN 3 Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
9 JULY 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021218
SCALE 1/1
WT
SHEET 2 OF 2

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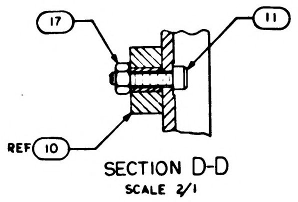
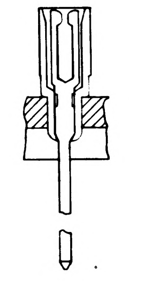
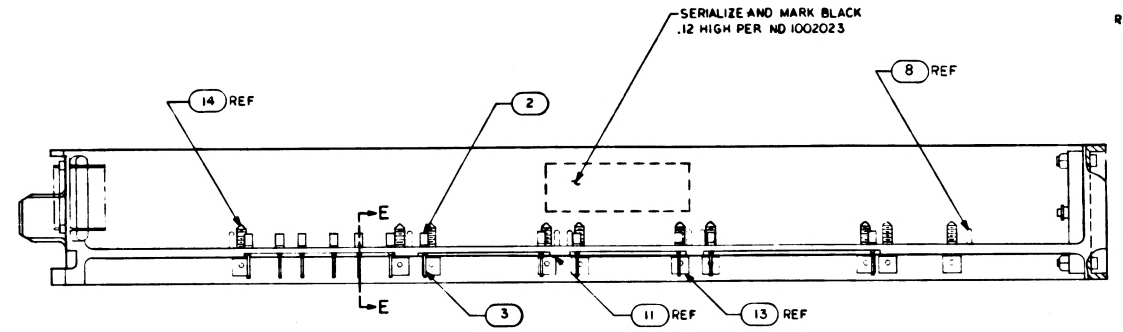
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 [illegible] 65	[illegible]
B	REVISED PER TDRR [illegible]643	[illegible]	[illegible]

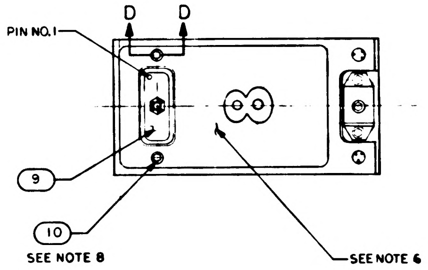


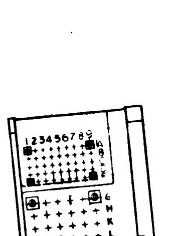
SECTION D-D
SCALE 2/1

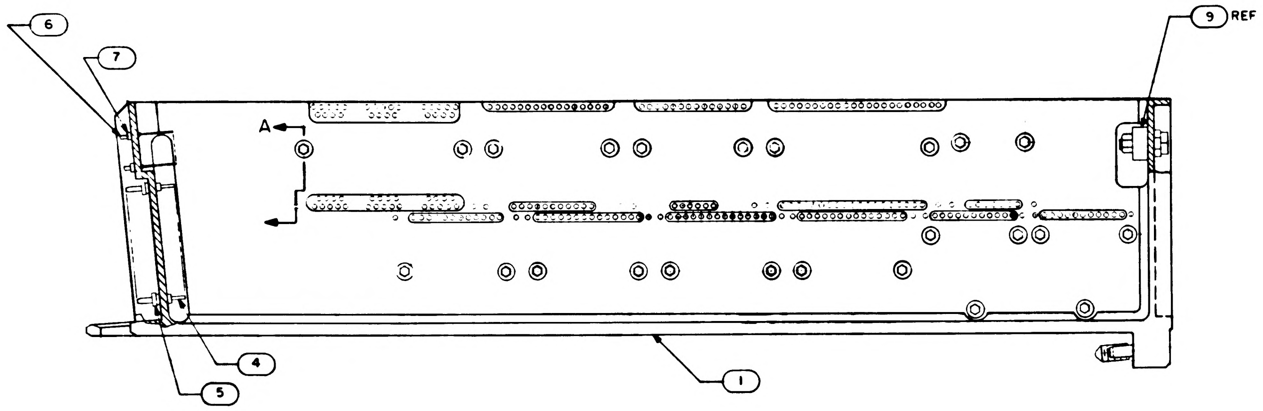


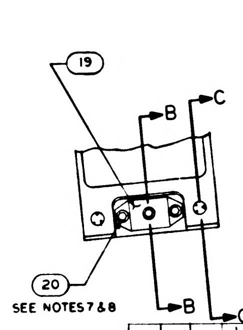
PARTIAL SECTION E-E
226 PLACES

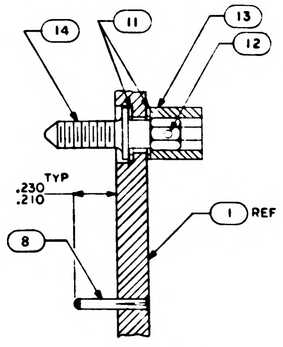




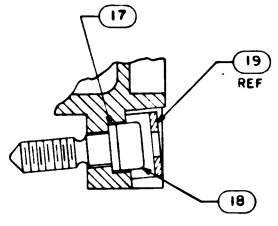




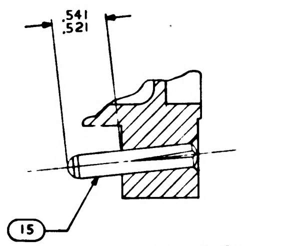




SECTION A-A
SCALE 3/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND F1B	45A8J13-2
F1E	-3
F1F	-4
F2B	-5
F2E	-6
F2F	-7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEMS NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136.
3. MARK PER ND 1002019 WHITE.
4. BOND ITEMS NO. 21,22,23,24,25,26 & 27 TO ITEMS NO. 1 PER ND 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR, EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO.20 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEMS NO. 10 AND 20 TO ITEM NO. 1 TO BE 5.0/5.5 IN.LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
   ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60
   ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT.
10. PROCURE PER PS 1007148.
11. PRIOR TO INSTALLATION OF ITEM NO 27 COVER ITEM NO 29 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM 27 COVER UNINSULATED SURFACES OF ITEM NO 27 WITH ND 1002004 TYPE 1.

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		31	1021204-007	CONTACT
			X		30	1010230	WIRING DIAGRAM
			AR		29	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5 .38 WIDE
			1		28	1021205-001	RECEPTACLE, DS TYPE
			1		27	1021208	WIRING HARNESS F
			1		26	1015748	WIRE LIST AA
			1		25	1015747	WIRING HARNESS E
			1		24	1015746	WIRING HARNESS D
			1		23	1015745	WIRING HARNESS C
			1		22	1015744	WIRING HARNESS B
			1		21	1015743	WIRING HARNESS A
			3		20	MS16995-10	SCREW CAP SOCKET HEAD
			1		19	1001317	RETAINER, JACK SCREW,
			1		18	1008098	SCREW, SOCKET HEAD
			1		17	1008099-2	WASHER
			2		16	MS 21045C04	NUT SELF-LOCKING HEX
			2		15	1010620-2	PIN, GUIDE
			24		14	1008095	SCREW, JACK
			24		13	1004207	DRIVE CYLINDER
			24		12	MS 171433	PIN, SPRING
			48		11	1004206	WASHER, THRUST
			2		10	MS16995-11	SCREW, CAP, SOCKET HEAD
			1		9	1010622-1	CONNECTOR RECEPTACLE
			22		8	1010620-1	PIN GUIDE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONN
			226		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			226		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008408	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021228-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING

MATERIAL —

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION. GMC
MILWAUKEE WISCONSIN

ACSP PN

DRAWN J Koracin DATE 3 JUN 64
CHECKED [illegible] 5 JUN 64
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible] 7/14/64
MIT APPROVAL [illegible] 14 [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

CODE IDENT NO
SIZE E
1021218
SCALE 1/1
SHEET OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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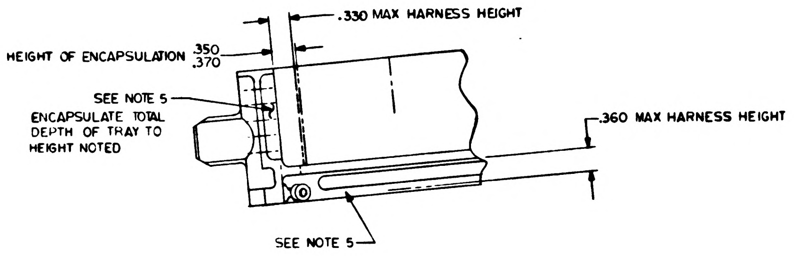
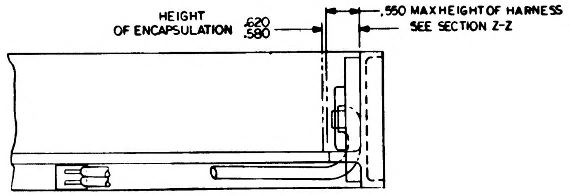
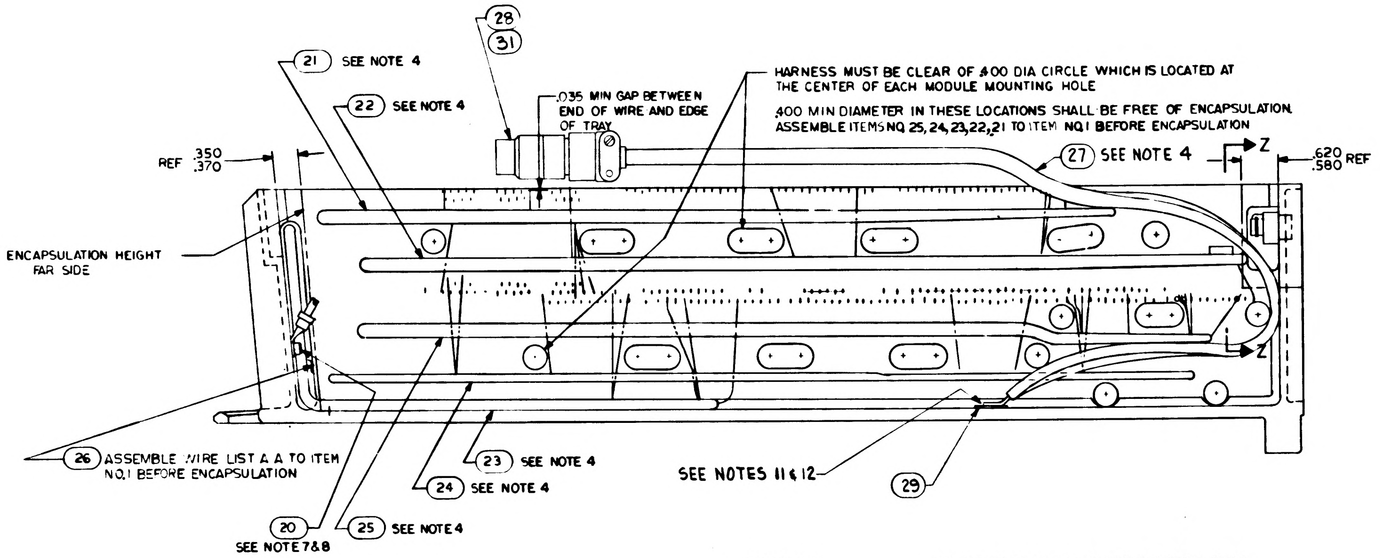
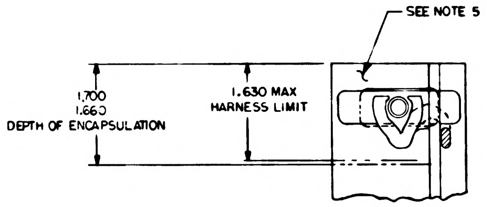
B	REVISED PER TDRR 16643	26 FEB 65	


.330 MAX HARNESS HEIGHT
HEIGHT OF ENCAPSULATION .350 .370
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

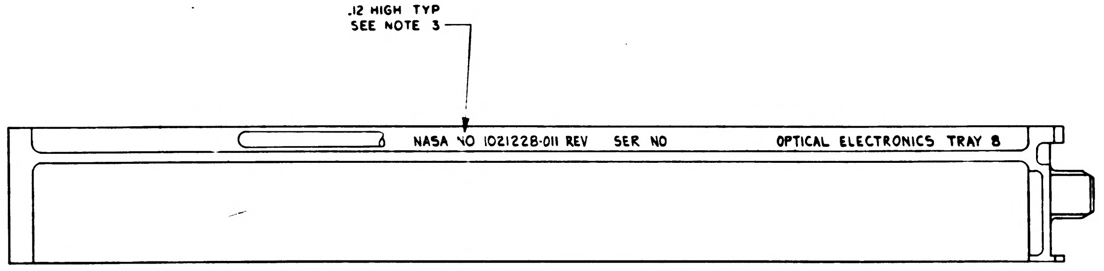

HEIGHT OF ENCAPSULATION .620 .580
.550 MAX HEIGHT OF HARNESS SEE SECTION Z-Z


28
31
21 SEE NOTE 4
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION.
ASSEMBLE ITEMS NO. 25, 24, 23, 22, 21 TO ITEM NO. 1 BEFORE ENCAPSULATION
27 SEE NOTE 4
Z
Z
.620 .580 REF
REF .350 .370
ENCAPSULATION HEIGHT FAR SIDE
26 ASSEMBLE WIRE LIST A A TO ITEM NO.1 BEFORE ENCAPSULATION
23 SEE NOTE 4
24 SEE NOTE 4
SEE NOTES 11 & 12
29
20 SEE NOTE 7&8
25 SEE NOTE 4

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

PARTIAL SECTION Z - Z


.12 HIGH TYP SEE NOTE 3
NASA NO 1021228-011 REV SER NO
OPTICAL ELECTRONICS TRAY 8

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021228-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
Cambridge Mass
Contract NAS 9-497
DRAWN J Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 Jun 64
B. of Test 9 July 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

CODE IDENT NO
SIZE E
NASA DRAWING NO 1021218
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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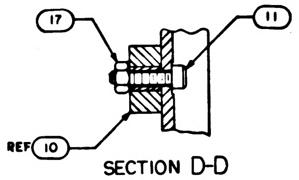
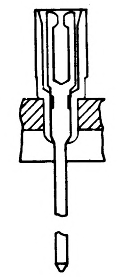
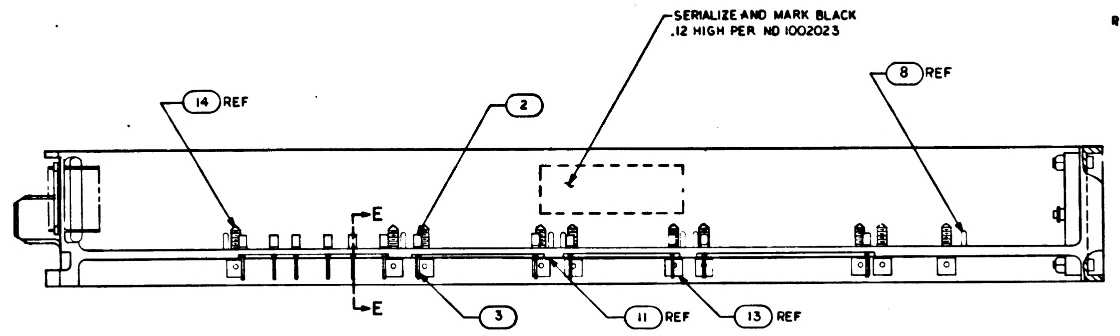
B	REVISED PER TDRR 16643	26 FEB 65	
C	REVISED PER TDRR 16980	10 MAR 65	J J J

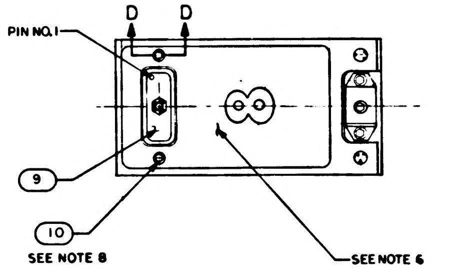


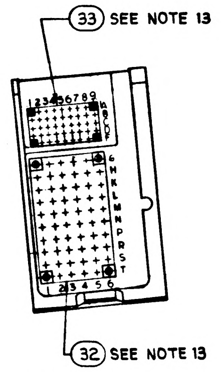
SECTION D-D
SCALE 2/1

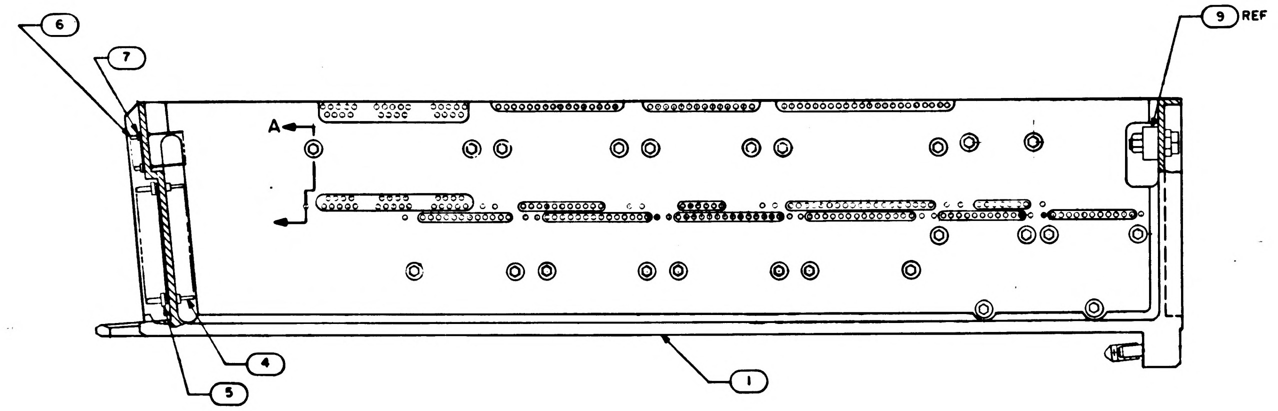


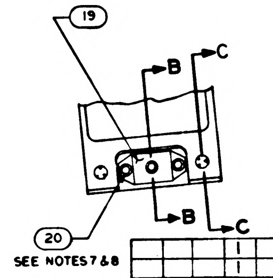
PARTIAL SECTION E-E
226 PLACES

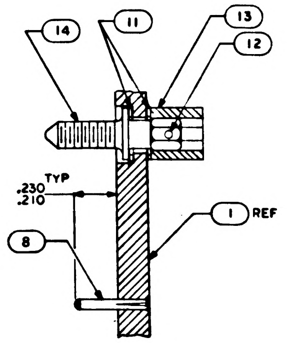




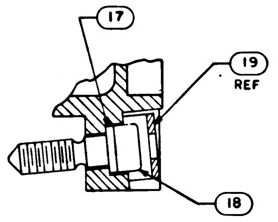




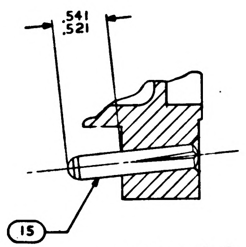




SECTION A-A
SCALE 3/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND F1B	45A8J13-2
F1E	-3
F1F	-4
F2B	-5
F2E	-6
F2F	-7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEMS NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136.
3. MARK PER ND 1002019 WHITE.
4. BOND ITEMS NO. 21,22,23,24,25,26 & 27 TO ITEMS NO.1 PER ND 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR, EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO.20 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEMS NO. 10 AND 20 TO ITEM NO.1 TO BE 5.0/5.5 IN.LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
   ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn60
   ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT.
10. PROCURE PER PS 1007148.
11. PRIOR TO INSTALLATION OF ITEM NO 27 COVER ITEM NO 29 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM 27 COVER UNINSULATED SURFACES OF ITEM NO 27 WITH ND 1002004 TYPE 1.
13. BOND ITEM NUMBERS 32 AND 32 TO ITEM NUMBERS 5 AND 7 PER ND 1002237.

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		33	1008553	GASKET
			1		32	1008552	GASKET
			1		31	1021204-007	CONTACT
			X		30	1010230	WIRING DIAGRAM
			AR		29	MIL-I-15126	MYLAR TAPE, TYPE MFT25 .38 WIDE
			1		28	1021205-001	RECEPTACLE, DS TYPE
			1		27	1021208	WIRING HARNESS F
			1		26	1015748	WIRE LIST AA
			1		25	1015747	WIRING HARNESS E
			1		24	1015746	WIRING HARNESS D
			1		23	1015745	WIRING HARNESS C
			1		22	1015744	WIRING HARNESS B
			1		21	1015743	WIRING HARNESS A
			3		20	MS16995-10	SCREW CAP SOCKET HEAD
			1		19	1001317	RETAINER, JACK SCREW
			1		18	1008098	SCREW, SOCKET HEAD
			1		17	1008099-2	WASHER
			2		16	MS21045C04	NUT SELF-LOCKING HEX
			2		15	1010620-2	PIN, GUIDE
			24		14	1008095	SCREW, JACK
			24		13	1004207	DRIVE CYLINDER
			24		12	MS171433	PIN, SPRING
			48		11	1004206	WASHER, THRUST
			2		10	MS16995-11	SCREW, CAP, SOCKET HEAD
			1		9	1010622-1	CONNECTOR RECEPTACLE
			22		8	1010620-1	PIN GUIDE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONN
			226		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			226		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008408	FRAME

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021228-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/3/64
APPROVAL 3 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 Jul 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

CODE IDENT NO.
SIZE E
1021218
SCALE 1/1
SHEET 1 OF 2

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REVISIONS TDRR 17207

SYM	DESCRIPTION	DATE	APPROVAL
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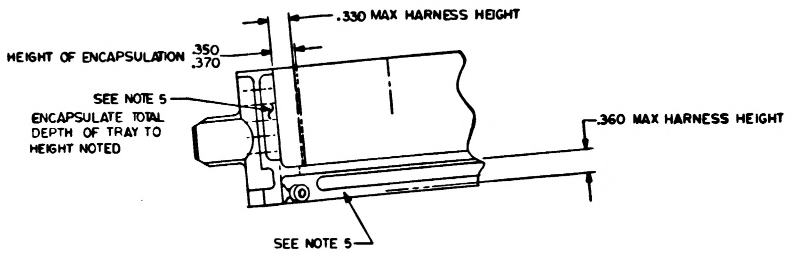
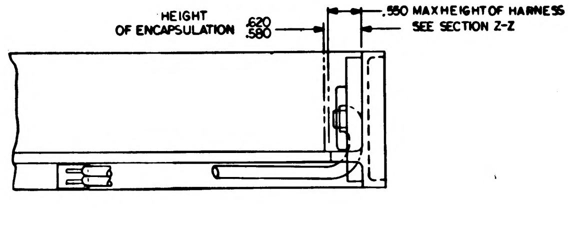
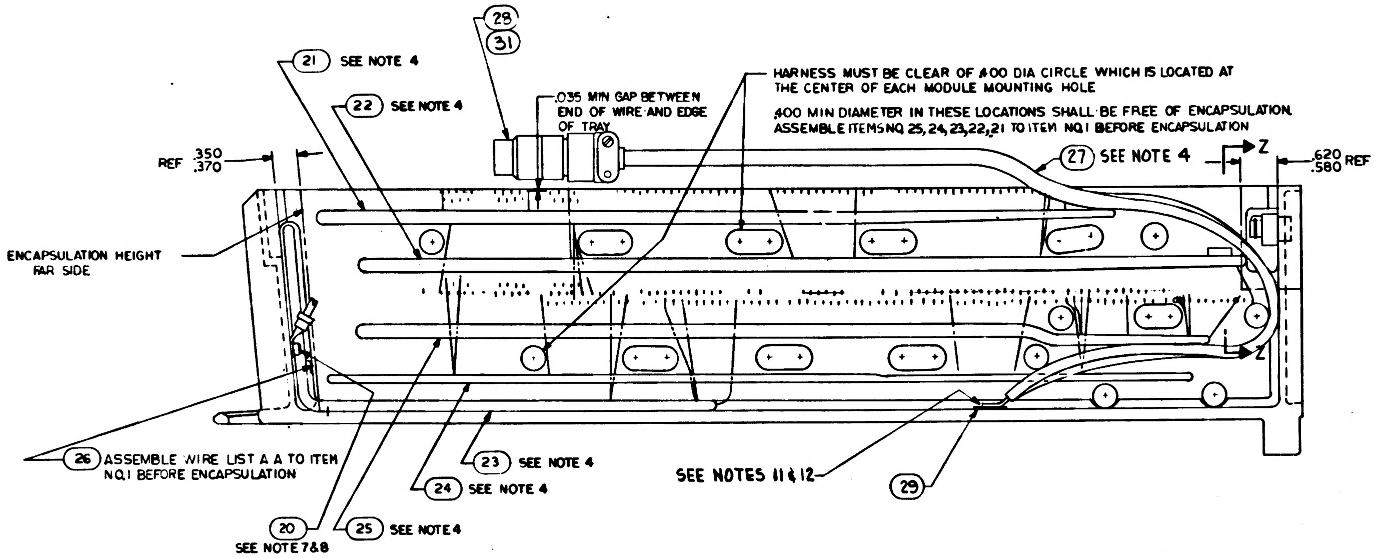
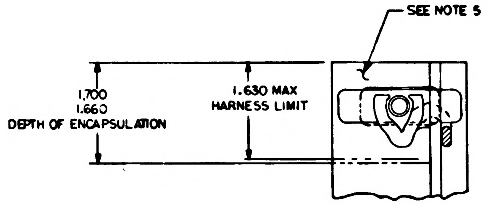
B	REVISED PER TDRR 16643	26-FEB-65	
C	REVISED PER TDRR 16980	10 MAR 65	J J J


.330 MAX HARNESS HEIGHT
HEIGHT OF ENCAPSULATION .350 .370
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

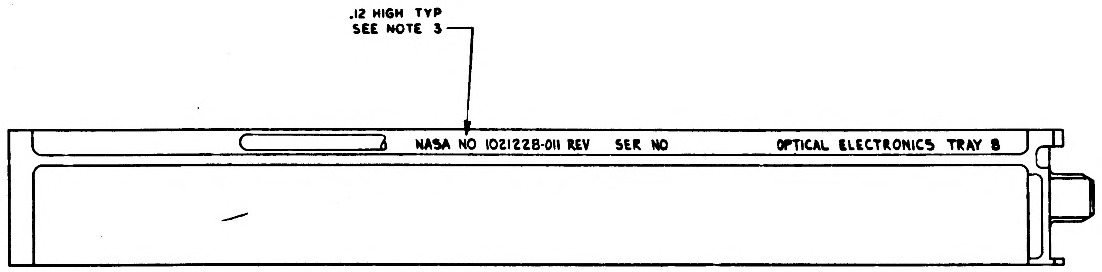

HEIGHT OF ENCAPSULATION .620 .580
.550 MAX HEIGHT OF HARNESS SEE SECTION Z-Z


28
31
21 SEE NOTE 4
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION.
ASSEMBLE ITEMS NO 25, 24, 23, 22, 21 TO ITEM NO.1 BEFORE ENCAPSULATION
REF .350 .370
27 SEE NOTE 4
Z
.620 .580 REF
ENCAPSULATION HEIGHT FAR SIDE
Z
26 ASSEMBLE WIRE LIST A A TO ITEM NO.1 BEFORE ENCAPSULATION
23 SEE NOTE 4
24 SEE NOTE 4
SEE NOTES 11 & 12
29
20 SEE NOTE 7&8
25 SEE NOTE 4

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

PARTIAL SECTION Z - Z


.12 HIGH TYP SEE NOTE 3
NASA NO 1021228-011 REV SER NO
OPTICAL ELECTRONICS TRAY 8

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021228-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN F Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
9 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

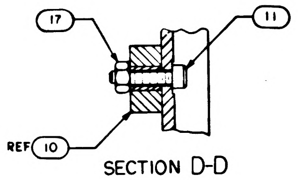
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

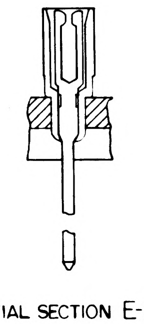
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021218
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

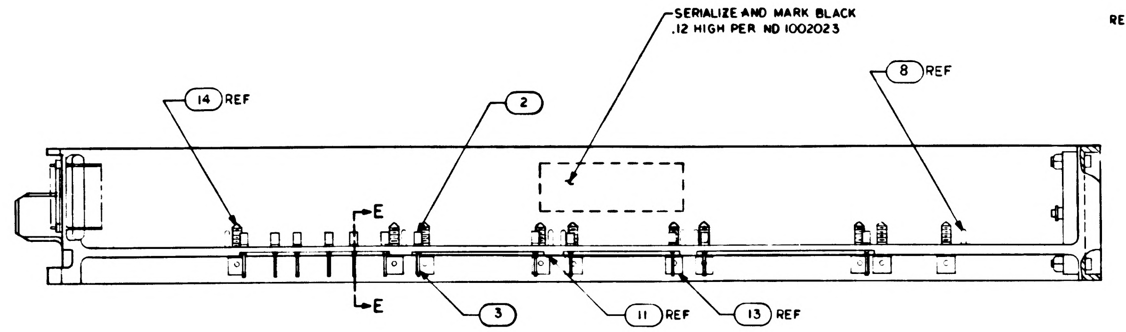
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	
B	REVISED PER TDRR 16343	26-FE -66	
C	REVISED PER TDRR 6980	10 MAR 65	
D	REVISED PER TDRR 20 3	21 JUN 65	

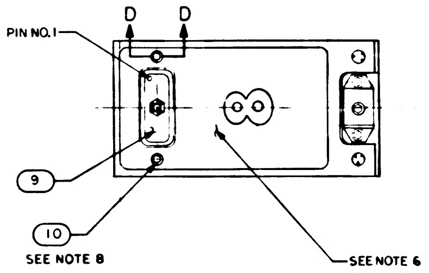


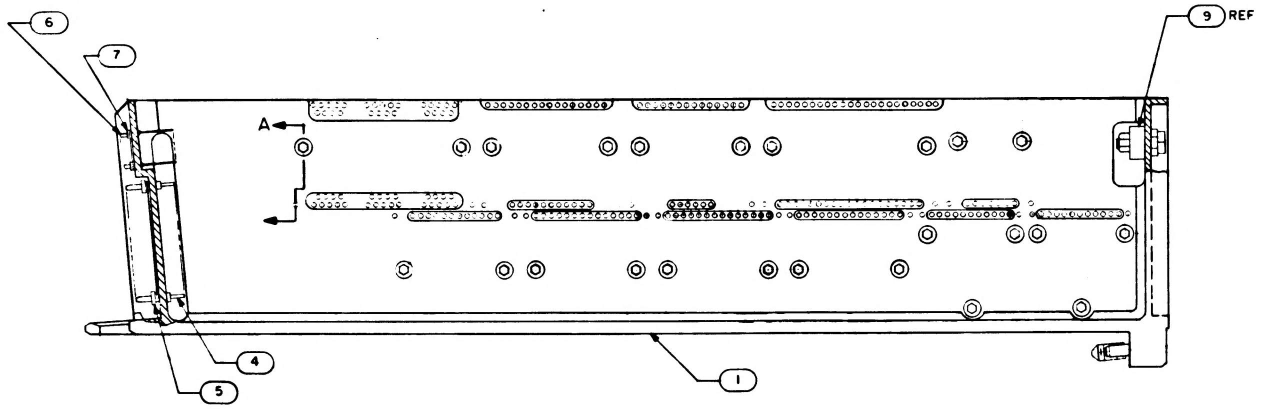
SECTION D-D
SCALE 2/1

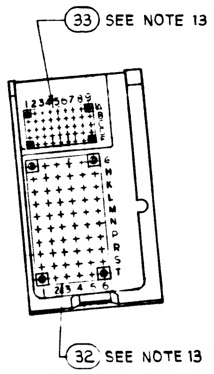


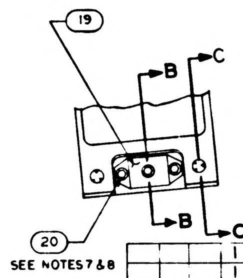
PARTIAL SECTION E-E
226 PLACES

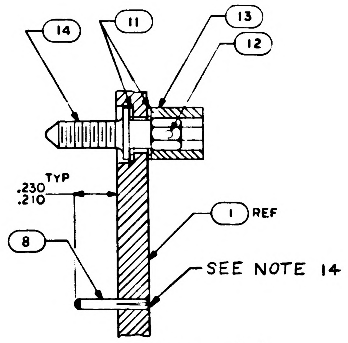




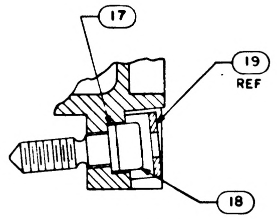




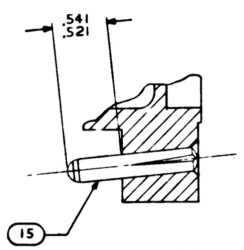




SECTION A-A
SCALE 3/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND F1B	45A8J13-2
F1E	-3
F1F	-4
F2B	-5
F2E	-6
F2F	-7

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEMS NO. 2, 3, 4, 5, 6 AND 7 PER ND 1002136.
3. MARK PER ND 1002019 WHITE.
4. BOND ITEMS NO. 21, 22, 23, 24, 25, 26 & 27 TO ITEMS NO. 1 PER 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL. BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR, EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO. 20 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEMS NO. 10 AND 20 TO ITEM NO. 1 TO BE 5.0/5.5 IN.LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60
ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT.
10. ~~PROCURE PER PS 1007148.~~
11. PRIOR TO INSTALLATION OF ITEM NO 27 COVER ITEM NO 29 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM 27 COVER UNINSULATED SURFACES OF ITEM NO 27 WITH ND 1002004 TYPE 1.
13. BOND ITEM NUMBERS 32 AND 32 TO ITEM NUMBERS 5 AND 7 PER ND 1002237.
14. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
15. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

			1		33	1008553	GASKET
			1		32	1008552	GASKET
			1		31	1021204-007	CONTACT
			X		30	1010230	WIRING DIAGRAM
			AR		29	MIL-I-15126	MYLAR TAPE, TYPE MFT25 .38 WIDE
			1		28	1021205-001	RECEPTACLE, DS TYPE
			1		27	1021208	WIRING HARNESS F
			1		26	1015748	WIRE LIST AA
			1		25	1015747	WIRING HARNESS E
			1		24	1015746	WIRING HARNESS D
			1		23	1015745	WIRING HARNESS C
			1		22	1015744	WIRING HARNESS B
			1		21	1015743	WIRING HARNESS A
			3		20	MS16995-10	SCREW CAP SOCKET HEAD
			1		19	1001317	RETAINER, JACK SCREW
			1		18	1008098	SCREW, SOCKET HEAD
			1		17	1008099-2	WASHER
			2		16	MS 21045C04	NUT SELF-LOCKING HEX
			2		15	1010620-2	PIN, GUIDE
			24		14	1008095	SCREW, JACK
			24		13	1004207	DRIVE CYLINDER
			24		12	MS 171433	PIN, SPRING
			48		11	1004206	WASHER, THRUST
			2		10	MS16995-11	SCREW, CAP, SOCKET HEAD
			1		9	1010622-1	CONNECTOR RECEPTACLE
			22		8	MS 16556-604	PIN GUIDE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONN
			226		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			226		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008408	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021228-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+ 1°
- —	-.02	- 1°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN J Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL
APPROVAL
NASA APPROVAL 7/14/64
MIT APPROVAL 14 Jul 64

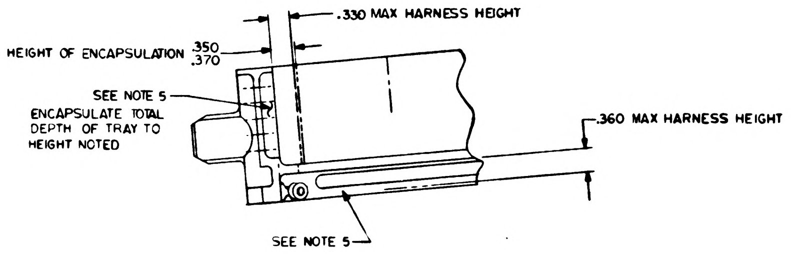
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

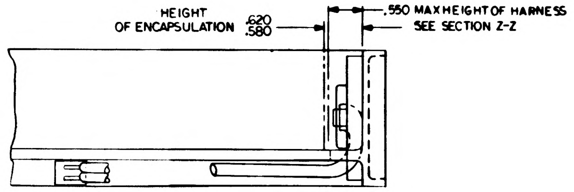
FRAME ASSEMBLY
TRAY 8

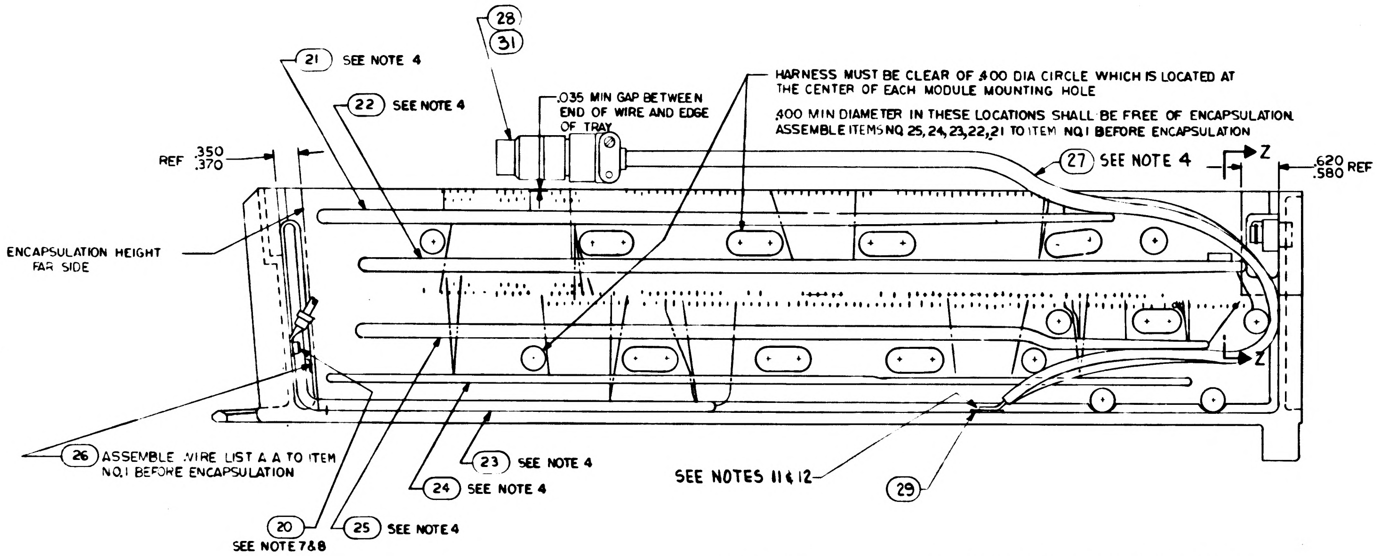
CODE IDENT NO 80230
SIZE E
1021218
SCALE 1/1
SHEET OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

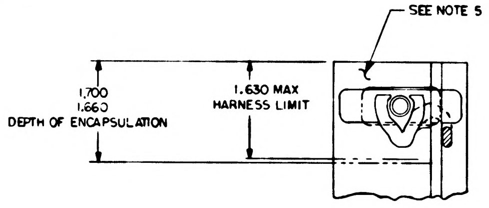
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	[illegible]
B	REVISED PER TDRR 16643	[illegible] FEB 65	[illegible]
C	REVISED PER TDRR 6980	10 MAR 65	[illegible]
D	REVISION STATUS CHANGED	[illegible]	[illegible]


.330 MAX HARNESS HEIGHT
HEIGHT OF ENCAPSULATION .350 .370
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

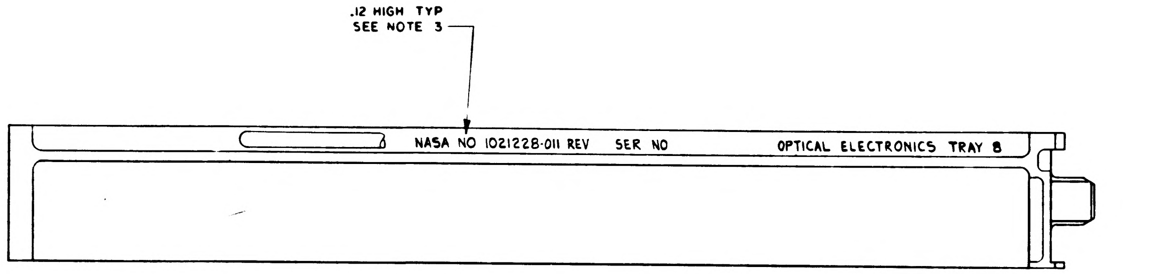

HEIGHT OF ENCAPSULATION .620 .580
.550 MAX HEIGHT OF HARNESS SEE SECTION Z-Z


28
31
21 SEE NOTE 4
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION.
ASSEMBLE ITEMS NO. 25, 24, 23, 22, 21 TO ITEM NO.1 BEFORE ENCAPSULATION
REF .350 .370
27 SEE NOTE 4
Z
.620 .580 REF
ENCAPSULATION HEIGHT FAR SIDE
Z
26 ASSEMBLE WIRE LIST A A TO ITEM NO.1 BEFORE ENCAPSULATION
23 SEE NOTE 4
24 SEE NOTE 4
SEE NOTES 11 & 12
29
20 SEE NOTE 7&8
25 SEE NOTE 4

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

PARTIAL SECTION Z - Z


.12 HIGH TYP SEE NOTE 3
NASA NO 1021228-011 REV SER NO
OPTICAL ELECTRONICS TRAY 8

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO

LIST OF MATERIALS

1021228-011	1021207-011	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ANGLES DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB Cambridge Mass. Contract NAS 9-497
NEXT ASSY	USED ON	MATERIAL	DRAWN F Koracin DATE 3 JUN 64 CHECKED [illegible] 5 JUN 64 APPROVAL [illegible] 6/5/64 APPROVAL [illegible] 8 JUN 64 [illegible] 9 JULY 64
APPLICATION		HEAT TREATMENT FINAL FINISH	NASA APPROVAL [illegible] 7/14/64 MIT APPROVAL [illegible] 14 July 64

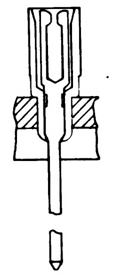
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

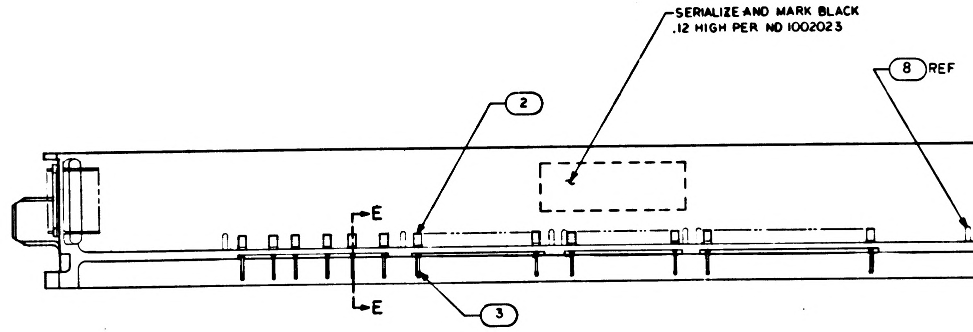
FRAME ASSEMBLY
TRAY 8

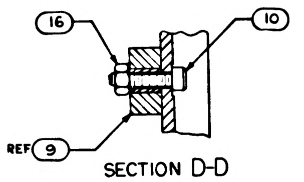
CODE IDENT NO	SIZE	NASA DRAWING NO.
80230	E	1021218
SCALE 1/1	WT	SHEET 2 OF 2

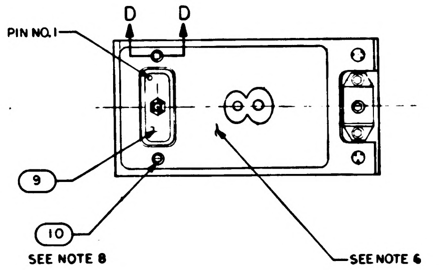
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

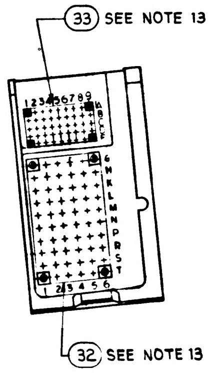
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	
B	REVISED PER TDRR 16643	26-FEB-65	
C	REVISED PER TDRR 16980	10 MAR 65	
D	REVISED PER TDRR 20119	21 JUN 65	
E	REVISED PER TDRR 20787	21 JUL 65	

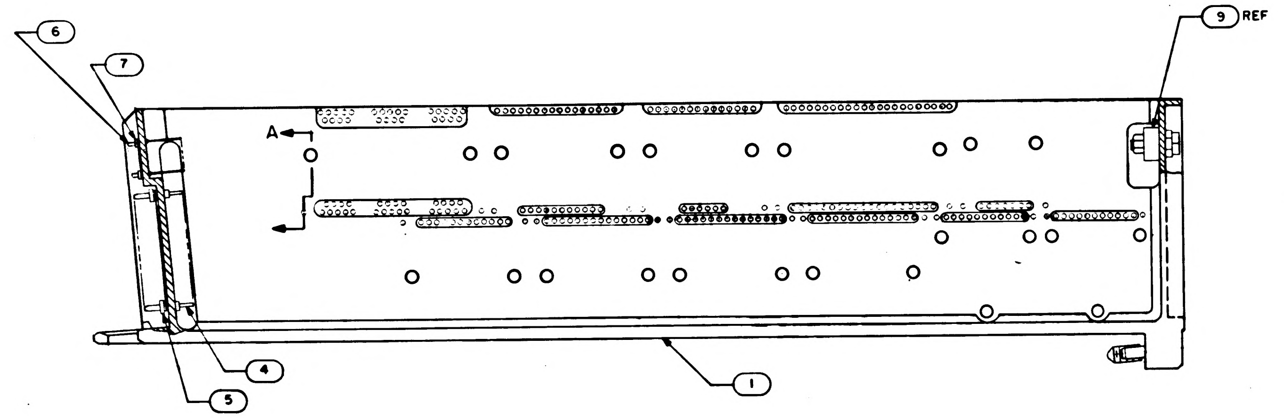


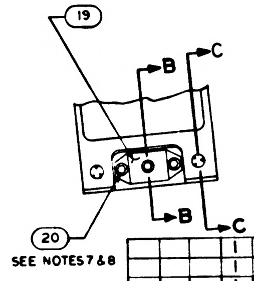


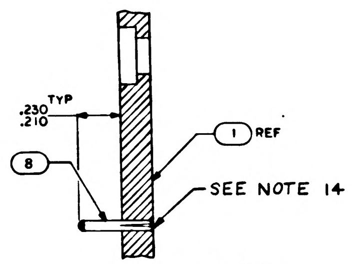


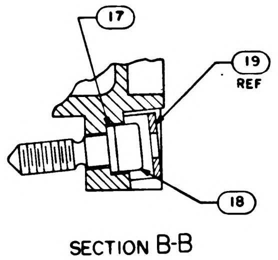


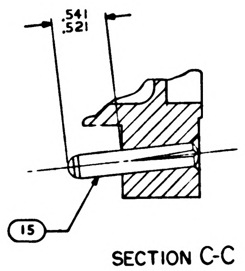












TERMINATION CHART	
FROM	TO
COND F1B	45A8J13-2
F1E	-3
F1F	-4
F2B	-5
F2E	-6
F2F	-7

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEMS NO. 2,3,4,5,6 AND 7 PER ND 1002136.
3. MARK PER ND 1002019 WHITE.
4. BOND ITEMS NO. 21,22,23,24,25,26 & 27 TO ITEMS NO.1 PER 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR, EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO.20 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEMS NO. 10 AND 20 TO ITEM NO. 1 TO BE 5.0/5.5 IN.LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
   ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60
   ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT.
10. PROCURE PER PS 1007148.
11. PRIOR TO INSTALLATION OF ITEM NO 27 COVER ITEM NO 29 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM 27 COVER UNINSULATED SURFACES OF ITEM NO 27 WITH ND 1002004 TYPE 1.
13. BOND ITEM NUMBERS 32 AND 32 TO ITEM NUMBERS 5 AND 7 PER ND 1002237.
14. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND 1002004, POTTING SIDE ONLY.
15. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND 1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND 1002004 TYPE I.

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		33	1008553	GASKET
			1		32	1008552	GASKET
			1		31	1021204-007	CONTACT
			☒		30	1010230	WIRING DIAGRAM
			AR		29	MIL-I-15126	MYLAR TAPE, TYPE MFT25 .38 WIDE
			1		28	1021205-001	RECEPTACLE, DS TYPE
			1		27	1021208	WIRING HARNESS F
			1		26	1015748	WIRE LIST AA
			1		25	1015747	WIRING HARNESS E
			1		24	1015746	WIRING HARNESS D
			1		23	1015745	WIRING HARNESS C
			1		22	1015744	WIRING HARNESS B
			1		21	1015743	WIRING HARNESS A
			3		20	MS16995-10	SCREW CAP SOCKET HEAD
			1		19	1001317	RETAINER, JACK SCREW
			1		18	1008098	SCREW, SOCKET HEAD
			1		17	1008099-2	WASHER
			2		16	MS21045C04	NUT SELF-LOCKING HEX
			2		15	1010620-2	PIN, GUIDE
			~~24~~		~~14~~	~~1008095~~	~~SCREW, JACK~~
			~~24~~		~~13~~	~~1004207~~	~~DRIVE CYLINDER~~
			~~24~~		~~12~~	~~MS171433~~	~~PIN, SPRING~~
			~~48~~		~~11~~	~~1004206~~	~~WASHER, THRUST~~
			2		10	MS16995-11	SCREW, CAP, SOCKET HEAD
			1		9	1010622-1	CONNECTOR RECEPTACLE
			22		8	MS16556-604	PIN GUIDE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONN
			226		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			226		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008408	FRAME

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021228-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .02 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN J Koracin DATE 5 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 5-JUN-64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 Jul

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

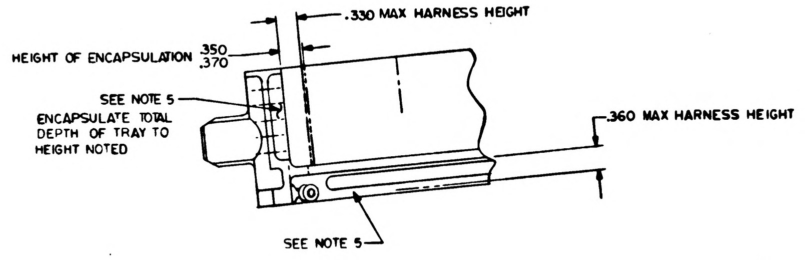
CODE IDENT NO. 80230
SIZE E
1021218
SCALE 1/1
SHEET 1 OF 2

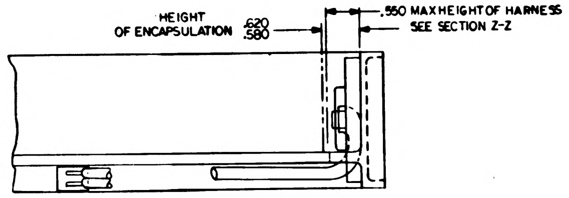
1021218 E

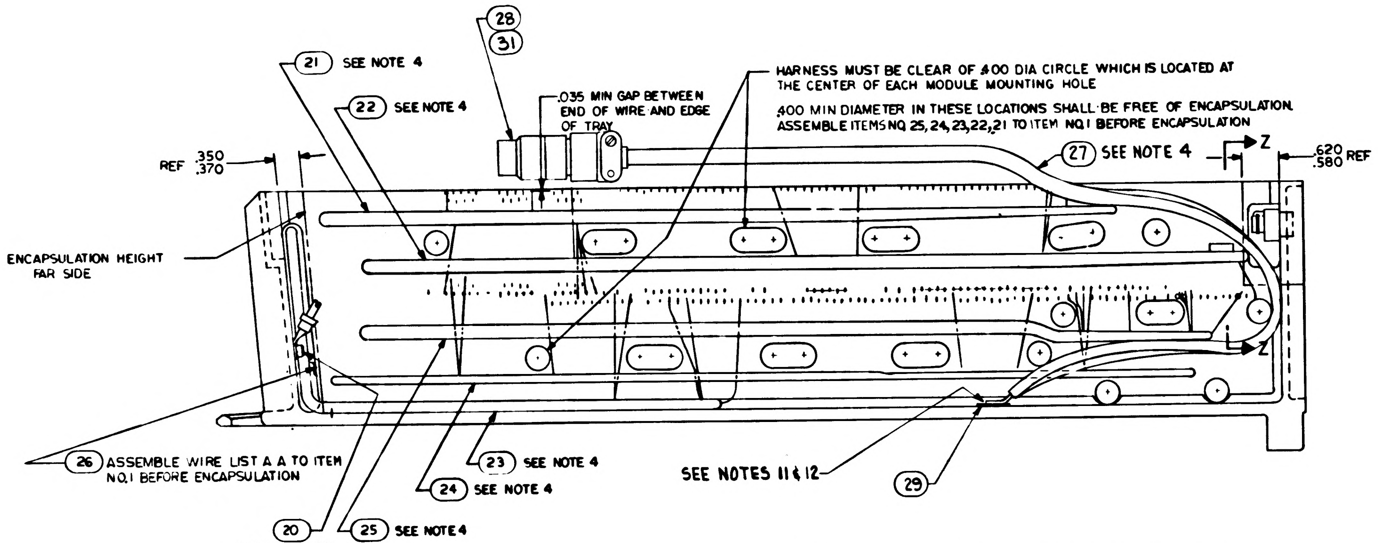
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

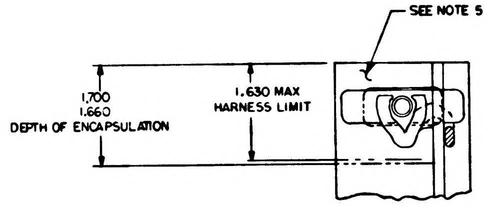
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 6C	[illegible]
B	REVISED PER TDRR 16643	26-FEB-65	[illegible]
C	REVISED PER TDRR 16980	10 MAR 65	J
D	REVISION STATUS CHANGED	[illegible]	RT MEM
E	REVISION STATUS CHANGED	[illegible]	RWH


.330 MAX HARNESS HEIGHT
HEIGHT OF ENCAPSULATION .350 .370
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

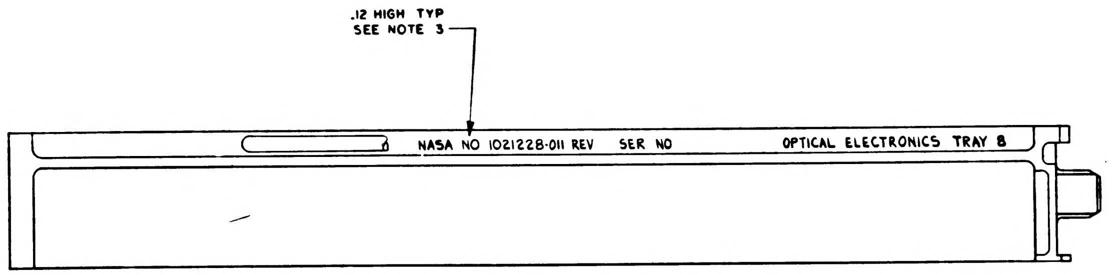

HEIGHT OF ENCAPSULATION .620 .580
.550 MAX HEIGHT OF HARNESS SEE SECTION Z-Z


28
31
21 SEE NOTE 4
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION.
ASSEMBLE ITEMS NO. 25, 24, 23, 22, 21 TO ITEM NO. 1 BEFORE ENCAPSULATION
REF .350 .370
27 SEE NOTE 4
Z
.620 .580 REF
ENCAPSULATION HEIGHT FAR SIDE
Z
26 ASSEMBLE WIRE LIST A A TO ITEM NO. 1 BEFORE ENCAPSULATION
23 SEE NOTE 4
24 SEE NOTE 4
SEE NOTES 11 & 12
29
20 SEE NOTE 7&8
25 SEE NOTE 4

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

PARTIAL SECTION Z - Z


.12 HIGH TYP SEE NOTE 3
NASA NO 1021228-011 REV SER NO
OPTICAL ELECTRONICS TRAY 8

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021228-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN J Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL R. Ocking 6/5/64
APPROVAL 8 Jun 64
8 July 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

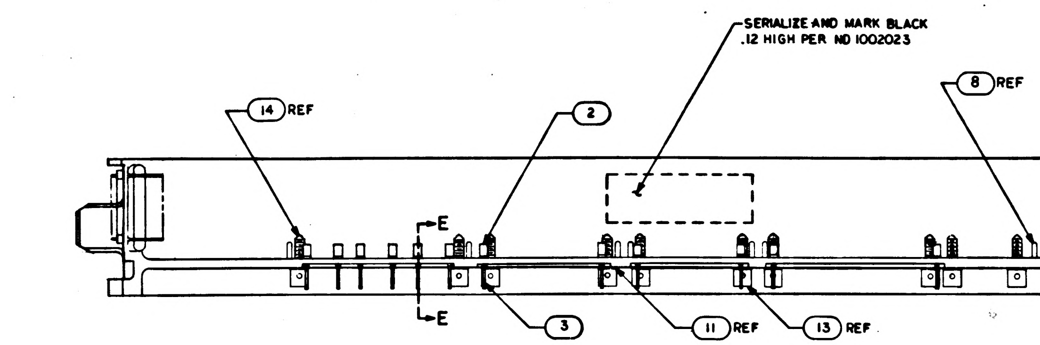
FRAME ASSEMBLY
TRAY 8

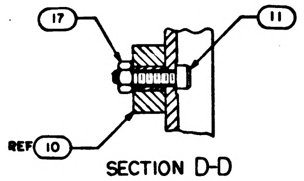
CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO. 1021218
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

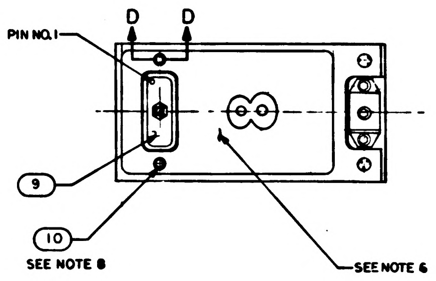
REVISIONS TDRR 10907

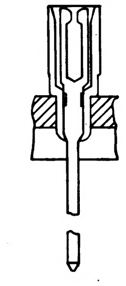
SYM	DESCRIPTION	DATE	APPROVAL

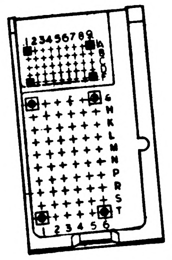


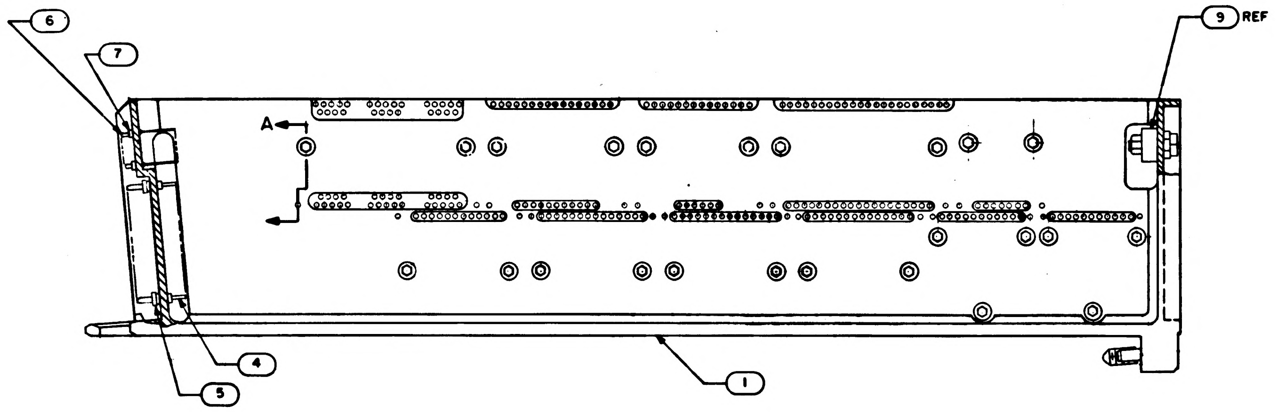


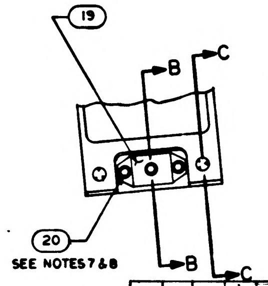
SECTION D-D
SCALE 2/1

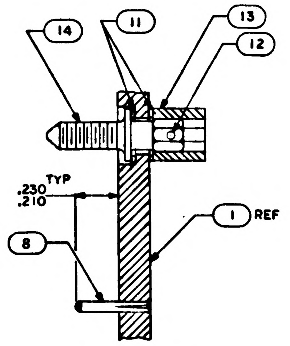



PARTIAL SECTION E-E
226 PLACES

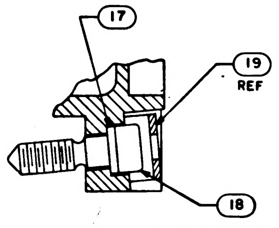




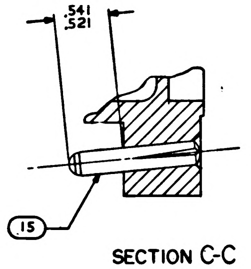




SECTION A-A
SCALE 3/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
COND F1B	45A8J13-2
F1E	-3
F1F	-4
F2B	-5
F2E	-6
F2F	-7

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEMS NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136.
3. MARK PER ND 1002019 WHITE.
4. BOND ITEMS NO. 21,22,23,24,25,26 & 27 TO ITEMS NO. 1 PER ND 1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR, EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
7. COAT THREADS OF ITEM NO. 20 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEMS NO. 10 AND 20 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005.
ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, Sn 60
ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINT.
~~10. PROCURE PER PS 1007148.~~
11. PRIOR TO INSTALLATION OF ITEM NO 27 COVER ITEM NO 29 AND ADJOINING AREA WITH THIN COATING OF ND 1002187.
12. AFTER INSTALLATION OF ITEM 27 COVER UNINSULATED SURFACES OF ITEM NO 27 WITH ND 1002004 TYPE 1.

MASTER

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		31	1021204-007	CONTACT
			X		30	1010098	WIRING DIAGRAM
			AR		29	MIL-I-15126	MYLAR TAPE, TYPE MFT25 .38 WIDE
			1		28	1021205-001	RECEPTACLE, DS TYPE
			1		27	1021208	WIRING HARNESS F
			1		26	1015748	WIRE LIST AA
			1		25	1015747	WIRING HARNESS E
			1		24	1015746	WIRING HARNESS D
			1		23	1015745	WIRING HARNESS C
			1		22	1015744	WIRING HARNESS B
			1		21	1015743	WIRING HARNESS A
			3		20	MS16995-10	SCREW CAP SOCKET HEAD
			1		19	1001317	RETAINER, JACK SCREW
			1		18	1008098	SCREW, SOCKET HEAD
			1		17	1008099-2	WASHER
			2		16	MS 21045C04	NUT SELF-LOCKING HEX
			2		15	1010620-2	PIN, GUIDE
			24		14	1008095	SCREW, JACK
			24		13	1004207	DRIVE CYLINDER
			24		12	MS 171433	PIN, SPRING
			48		11	1004206	WASHER, THRUST
			2		10	MS16995-11	SCREW, CAP, SOCKET HEAD
			1		9	1010622-1	CONNECTOR RECEPTACLE
			22		8	1010620-1	PIN GUIDE
			45		7	1006775	INSULATOR, WRAPOST MALE MIN
			45		6	1006782-2	CONTACT, WRAPOST, MALE MIN
			60		5	1010383-1	INSULATOR, WRAPOST, MALE
			60		4	1010382-1	CONTACT BLADE EDGE CONN
			226		3	1006781-2	CONTACT, WRAPOST, FEMALE MIN
			226		2	1006774	INSULATOR, WRAPOST, FEMALE MIN
			1		1	1008178	FRAME
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021228-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
− —	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN J Koracin DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

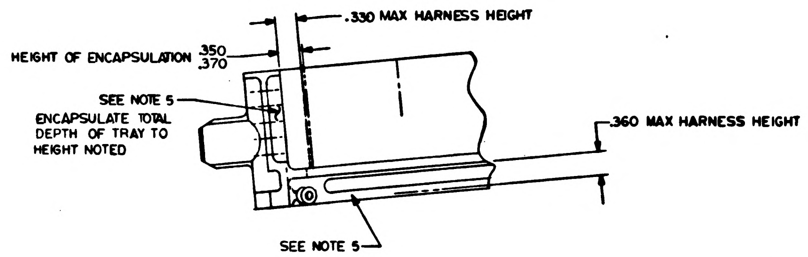
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

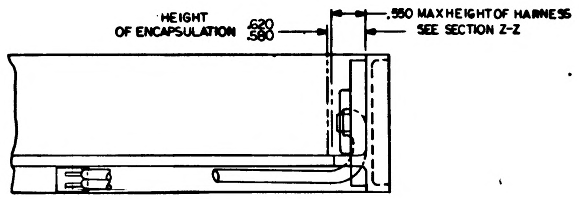
FRAME ASSEMBLY
TRAY B

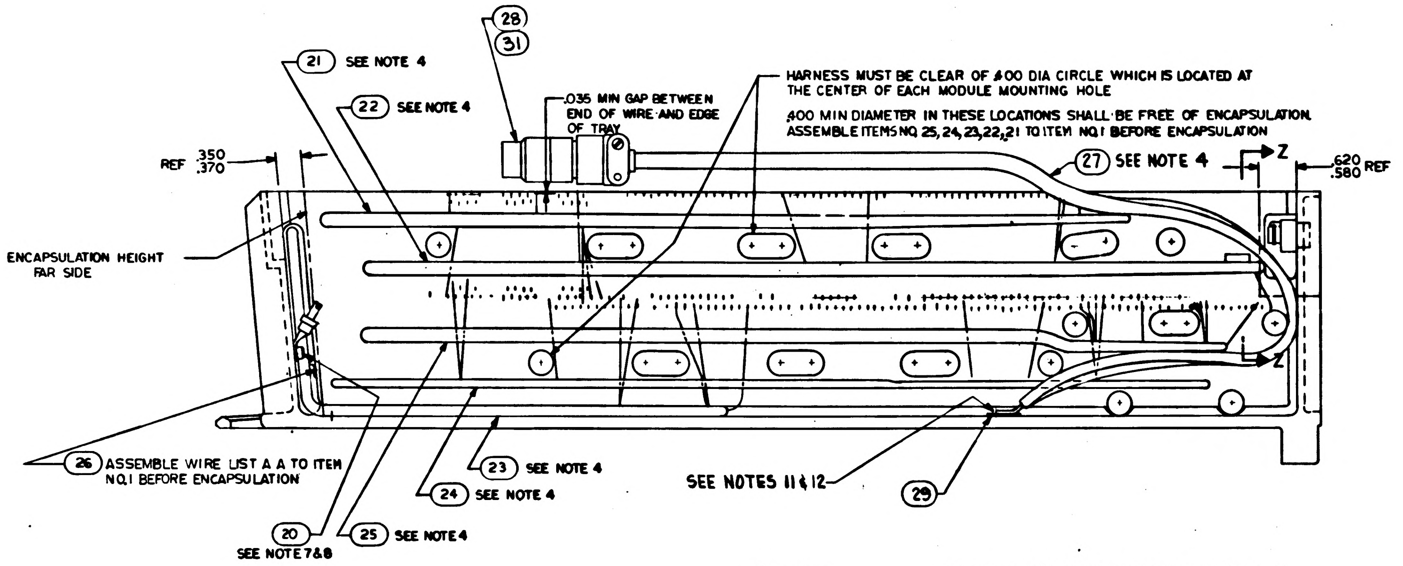
CODE IDENT NO.
SIZE E
1021218
SCALE 1/1
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

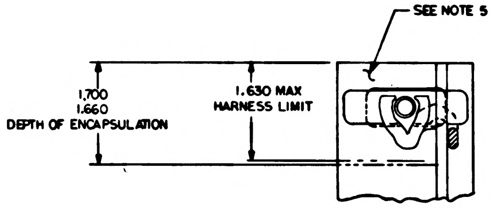
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL


.330 MAX HARNESS HEIGHT
HEIGHT OF ENCAPSULATION .350 .370
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

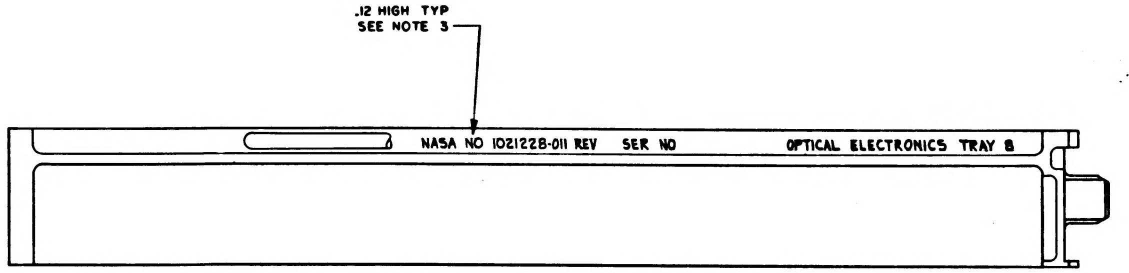

HEIGHT OF ENCAPSULATION .620 .580
.550 MAX HEIGHT OF HARNESS SEE SECTION Z-Z


28
31
21 SEE NOTE 4
22 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
HARNESS MUST BE CLEAR OF .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION.
ASSEMBLE ITEMS NO 25, 24, 23, 22, 21 TO ITEM NO 1 BEFORE ENCAPSULATION
REF .350 .370
27 SEE NOTE 4
Z
.620 .580 REF
ENCAPSULATION HEIGHT FAR SIDE
Z
26 ASSEMBLE WIRE LIST A A TO ITEM NO 1 BEFORE ENCAPSULATION
23 SEE NOTE 4
24 SEE NOTE 4
SEE NOTES 11 & 12
29
20 SEE NOTE 7 & 8
25 SEE NOTE 4

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.700 1.660 DEPTH OF ENCAPSULATION
1.630 MAX HARNESS LIMIT

PARTIAL SECTION Z - Z


.12 HIGH TYP SEE NOTE 3
NASA NO 1021228-011 REV SER NO
OPTICAL ELECTRONICS TRAY 8

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	NO.

LIST OF MATERIALS

1021228-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DWG. NO.
DRAWN F Koracin DATE 2 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
B. R. 9 Jun 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 July 64

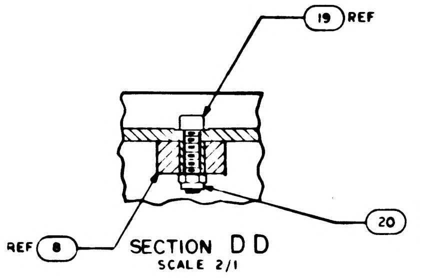
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 8

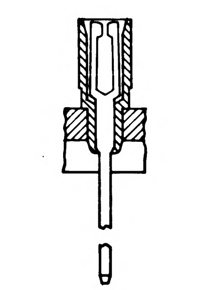
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021218
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

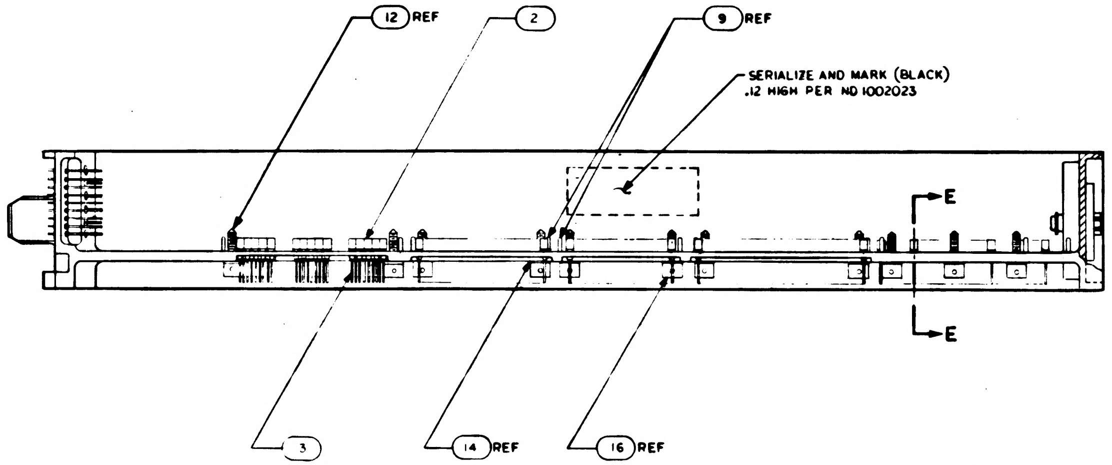
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	25 NOV 64	

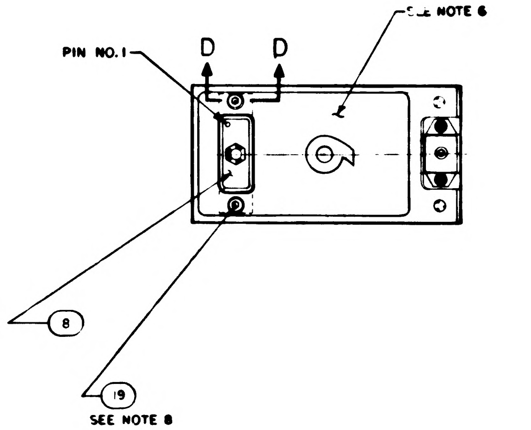


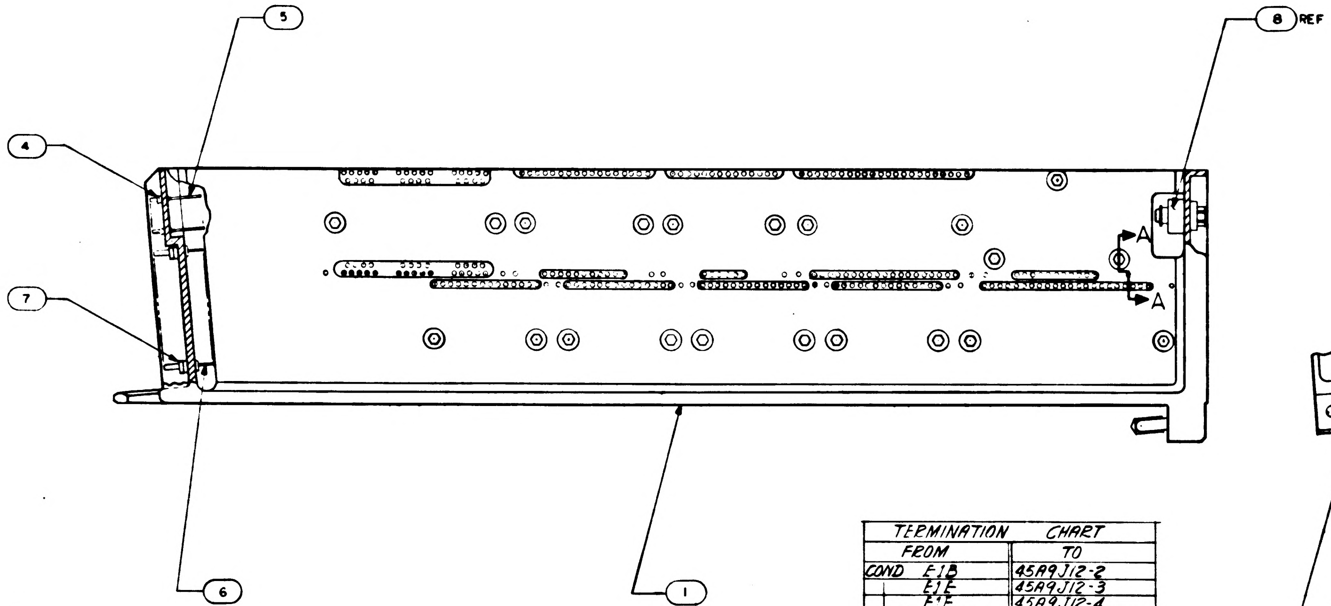
SECTION DD
SCALE 2/1

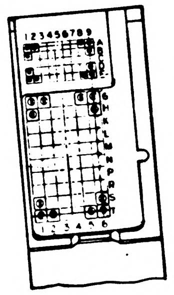


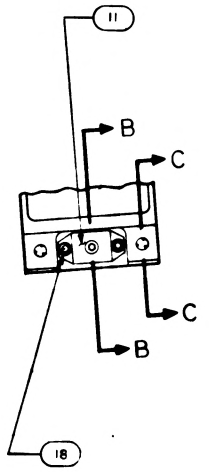
PARTIAL SECTION E-E
232 PLACES







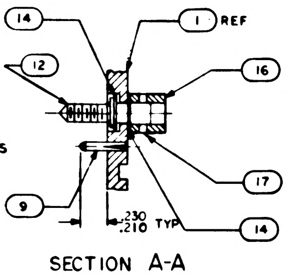




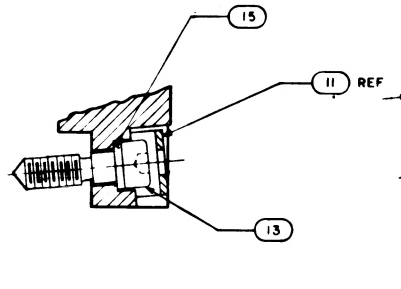
TERMINATION	CHART
FROM	TO
COND E1B	45A9J12-2
E1E	45A9J12-3
E1F	45A9J12-4
E2B	45A9J12-5
E2E	45A9J12-6
E2F	45A9J12-7

NOTES:

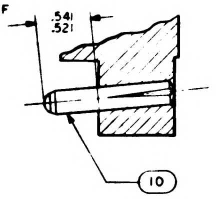
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NOS 21,22,23,24,25 & 26 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007149.
11. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 28 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
12. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

			1		30	1021204-007	CONTACT
			X		29	1010231	WIRING DIAGRAM
			AR		28	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		27	1021205-001	RECEPTACLE, DS TYPE
			1		26	1021209	WIRE HARNESS E
			1		25	1015759	WIRE LIST A A
			1		24	1015763	WIRING HARNESS D
			1		23	1015762	WIRING HARNESS C
			1		22	1015761	WIRING HARNESS B
			1		21	1015760	WIRING HARNESS A
			2		20	MS21045 C04	NUT, SELF LOCKING HEX.
			2		19	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		18	MS16995-10	SCREW, CAP, SOCKET HEAD
			21		17	MS171433	PIN SPRING
			21		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			42		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			21		12	1008095	SCREW, JACK
			1		11	1001317	RETAINER, JACK SCREW
			2		10	1010620-2	PIN, GUIDE
			20		9	1010620-1	PIN, GUIDE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			60		7	1010383	INSULATOR, WRAPOST MALE
			60		6	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			45		5	1006782-2	CONTACT, WRAPOST MALE MIN
			45		4	1006775	INSULATOR, WRAPOST MALE MIN
			232		3	1006781-2	CONTACT, WRAPOST FEMALE MIN
			232		2	1006774	INSULATOR, WRAPOST FEMALE MIN
			1		1	1008179	FRAME
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021229-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

A	—
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − — DECIMALS +.02 −.02 ANGLES +1° −1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE 2 JUNE 64
CHECKED 5 JUN 64
APPROVAL 5/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

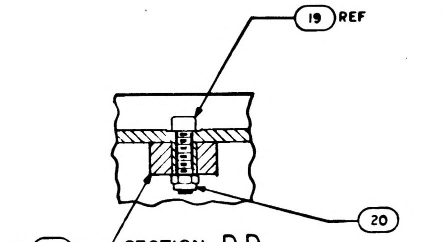
FRAME ASSEMBLY
TRAY 9

CODE IDENT NO
SIZE
1021219
SCALE 1:1
SHEET 1 OF 2

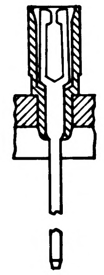
1021219 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

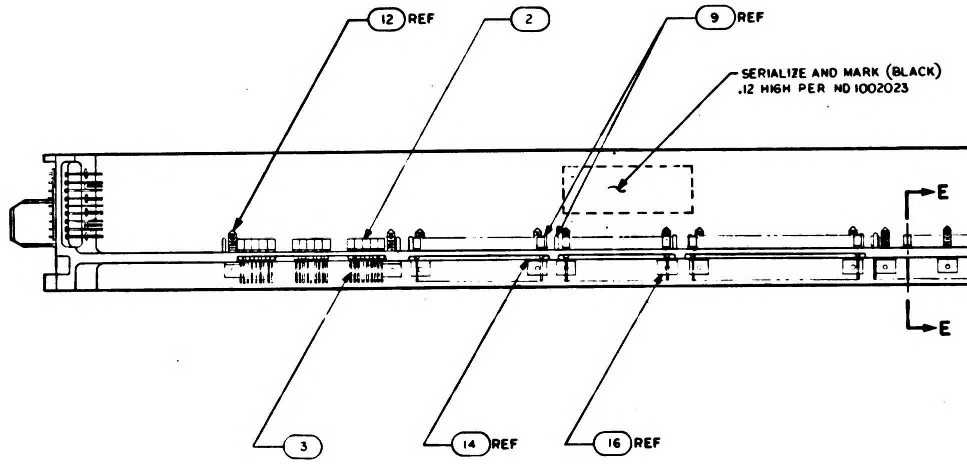
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	25 NOV 64	
B	REVISED PER TDRR 16980	10 MAR 65	

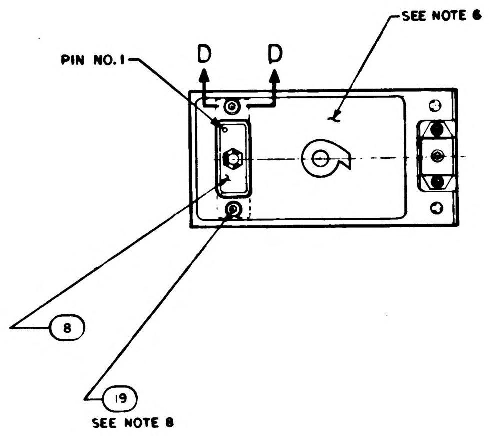


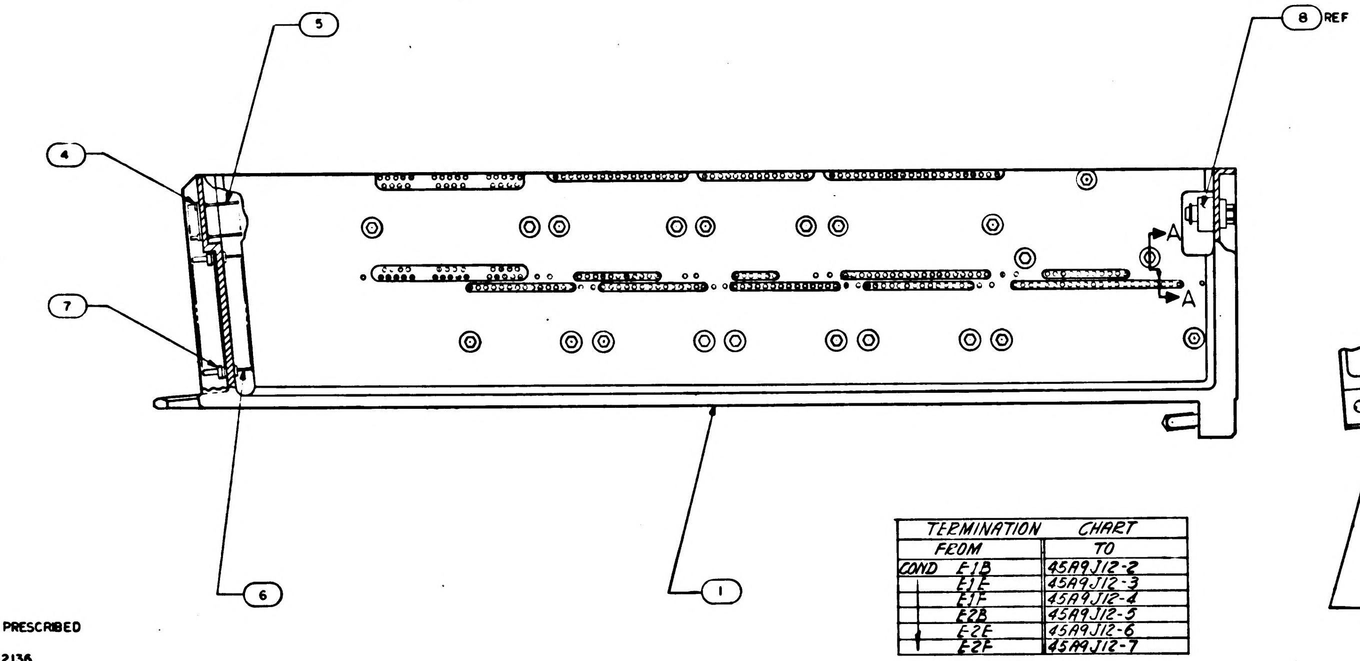
SECTION D D
SCALE 2/1

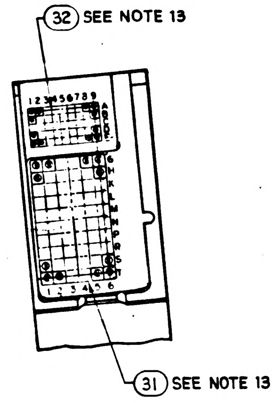


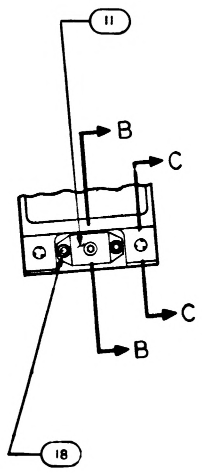
PARTIAL SECTION E-E
232 PLACES







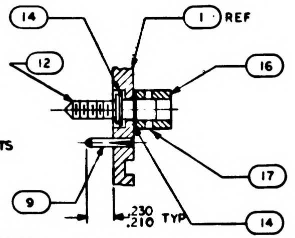




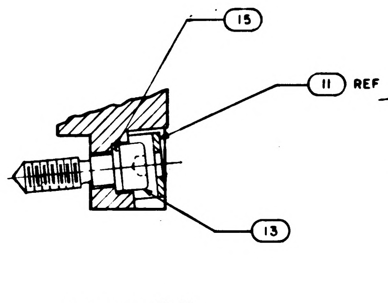
TERMINATION	CHART
FROM	TO
COND E1B	45A9J12-2
E1E	45A9J12-3
E1F	45A9J12-4
E2B	45A9J12-5
E2E	45A9J12-6
E2F	45A9J12-7

NOTES:

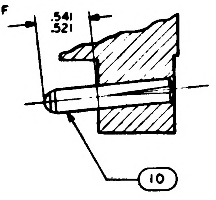
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NOS 21,22,23,24,25 & 26 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007149.
11. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 28 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
12. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND1002004 TYPE 1.
13. BOND ITEM NUMBERS 31 AND 32 TO ITEM NUMBERS 4 AND 7 PER ND 1002237.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

B	—
A	—
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

			1		32	1008553	GASKET
			1		31	1008552	GASKET
			1		30	1021204-007	CONTACT
			X		29	1010231	WIRING DIAGRAM
			AR		28	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		27	1021205-001	RECEPTACLE, DS TYPE
			1		26	1021209	WIRE HARNESS E
			1		25	1015759	WIRE LIST A A
			1		24	1015763	WIRING HARNESS D
			1		23	1015762	WIRING HARNESS C
			1		22	1015761	WIRING HARNESS B
			1		21	1015760	WIRING HARNESS A
			2		20	MS21045 C04	NUT, SELF LOCKING HEX.
			2		19	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		18	MS16995-10	SCREW, CAP, SOCKET HEAD
			21		17	MS171433	PIN SPRING
			21		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			42		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			21		12	1008095	SCREW, JACK
			1		11	1001317	RETAINER, JACK SCREW
			2		10	1010620-2	PIN, GUIDE
			20		9	1010620-1	PIN, GUIDE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			60		7	1010383-1	INSULATOR, WRAPOST MALE
			60		6	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			45		5	1006782-2	CONTACT, WRAPOST MALE MIN
			45		4	1006775	INSULATOR, WRAPOST MALE MIN
			232		3	1006781-2	CONTACT, WRAPOST FEMALE MIN
			232		2	1006774	INSULATOR, WRAPOST FEMALE MIN
			1		1	1008179	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021229-011	1021207-011	011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
− —	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION. GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN 2 JUNE 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL

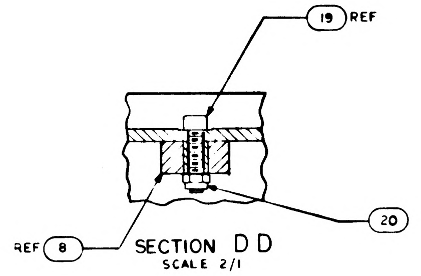
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 9

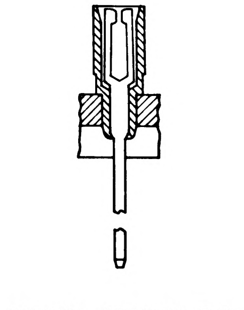
CODE IDENT NO.
SIZE
1021219
SCALE 1:1
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

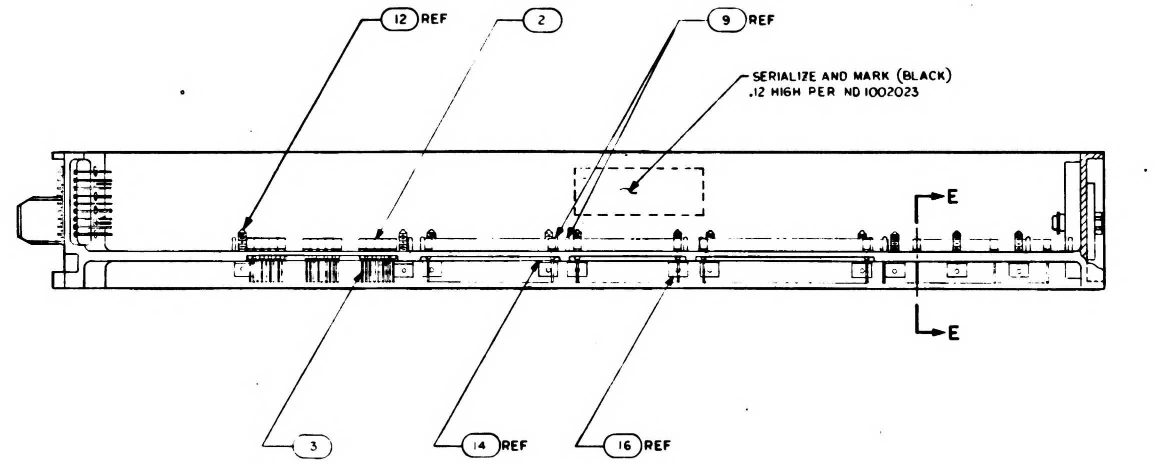
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	2 NOV 64	
B	REVISED PER TDRR 16980	10 MAR 65	
C	REVISED PER TDRR 20118	21-JUN 65	

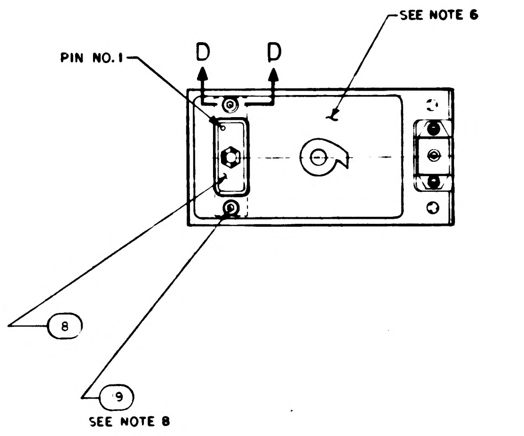


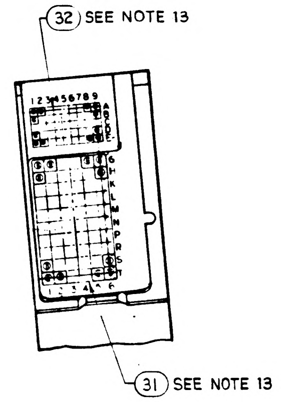
SECTION D D
SCALE 2/1

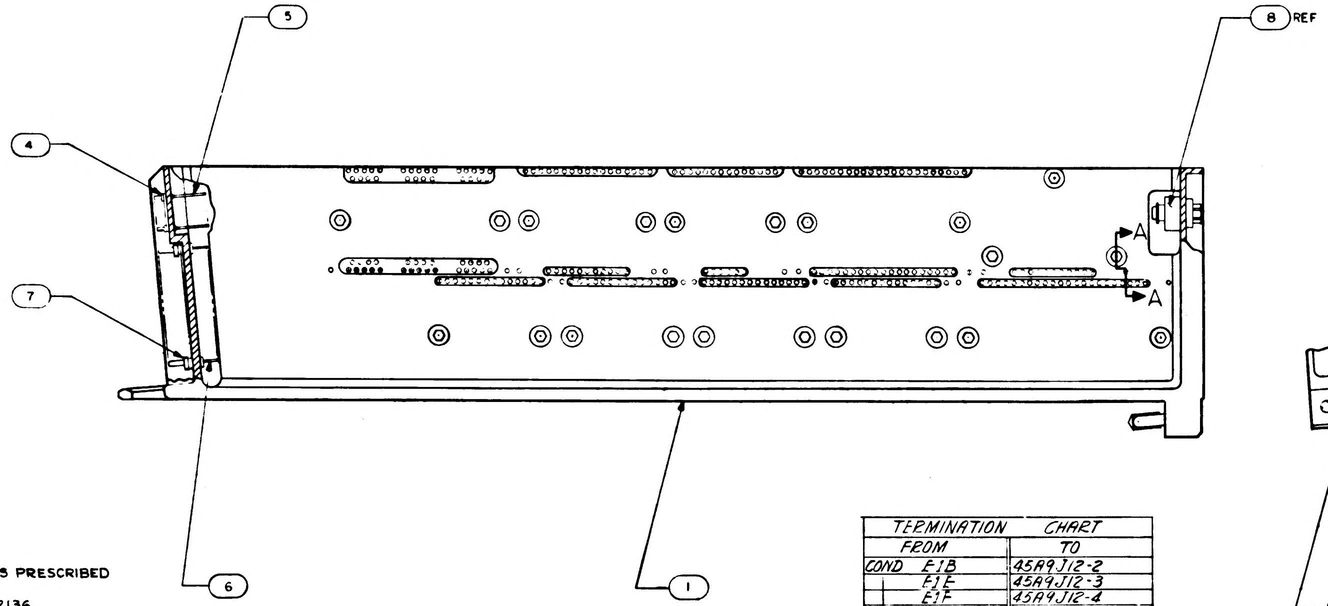


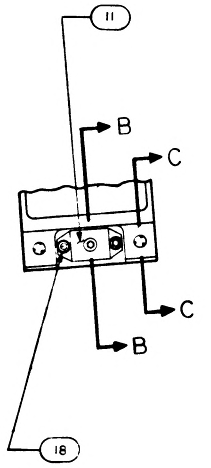
PARTIAL SECTION E-E
232 PLACES





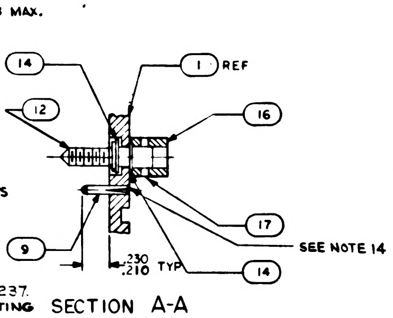




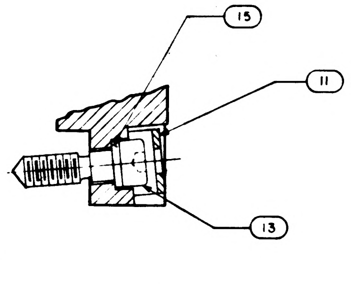


TERMINATION CHART	
FROM	TO
COND E1B	45A9J12-2
E1E	45A9J12-3
E1F	45A9J12-4
E2B	45A9J12-5
E2E	45A9J12-6
E2F	45A9J12-7

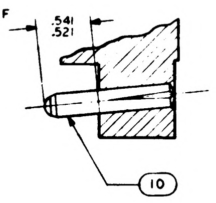
NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6, AND 7 PER ND1002136.
3. MARK PER ND1002019.
4. BOND ITEM NOS. 21,22,23,24,25 & 26 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007149.
11. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 28 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
12. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND1002004 TYPE 1.
13. BOND ITEM NUMBERS 31 AND 32 TO ITEM NUMBERS 4 AND 7 PER ND 1002237.
14. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE I ADHESIVE PER ND1002004, POTTING SIDE ONLY.
15. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

C	—
B	—
A	—
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		32	1008553	GASKET
			1		31	1008552	GASKET
			1		30	1021204-007	CONTACT
			X		29	1010231	WIRING DIAGRAM
			AR		28	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5,.38 WIDE
			1		27	1021205-001	RECEPTACLE, DS TYPE
			1		26	1021209	WIRE HARNESS E
			1		25	1015759	WIRE LIST A A
			1		24	1015763	WIRING HARNESS D
			1		23	1015762	WIRING HARNESS C
			1		22	1015761	WIRING HARNESS B
			1		21	1015760	WIRING HARNESS A
			2		20	MS21045 C04	NUT, SELF LOCKING HEX.
			2		19	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		18	MS16995-10	SCREW, CAP, SOCKET HEAD
			21		17	MS171433	PIN SPRING
			21		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			42		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			21		12	1008095	SCREW, JACK
			1		11	1001317	RETAINER, JACK SCREW
			2		10	1010620-2	PIN, GUIDE
			20		9	MS16556-604	PIN, GUIDE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			60		7	1010383-1	INSULATOR, WRAPOST MALE
			60		6	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			45		5	1006782-2	CONTACT, WRAPOST MALE PIN
			45		4	1006775	INSULATOR, WRAPOST MALE
			232		3	1006781-2	CONTACT, WRAPOST FEMALE
			232		2	1006774	INSULATOR WRAPOST FEMALE
			1		1	1008179	FRAME

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021229-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
– —	–.02	–1°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN C. Bilzon DATE 2 JUNE 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

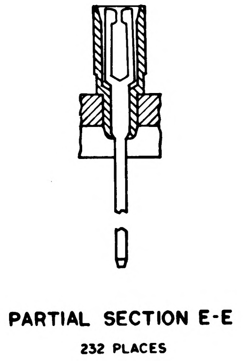
FRAME ASSEMBLY
TRAY 9

CODE IDENT NO 80230
SIZE
1021219
SCALE 1/1
SHEET 1 OF 2

1021219 C

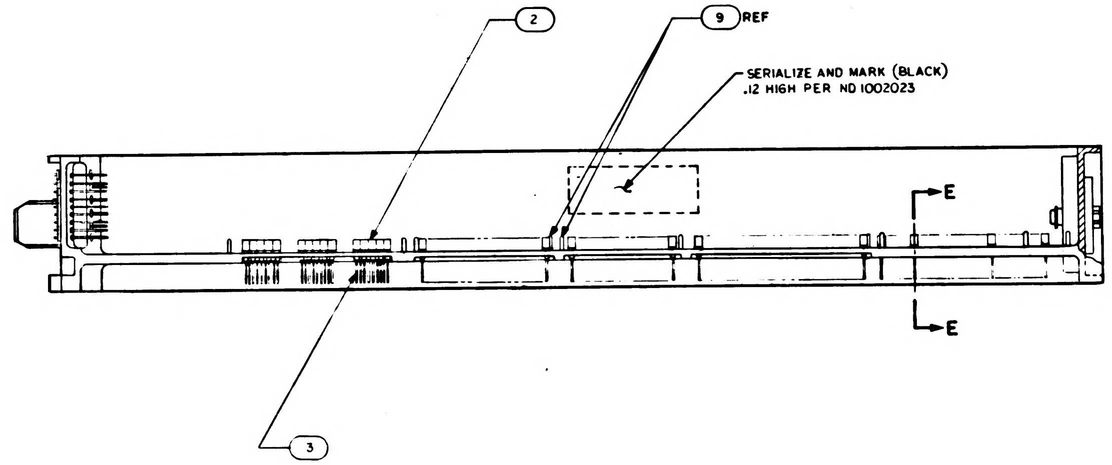
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

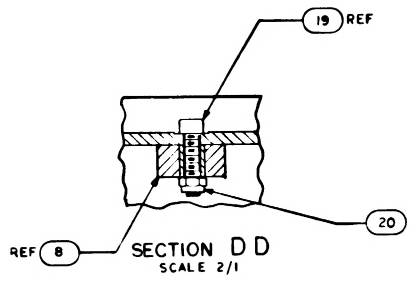
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	[illegible] 64	[illegible]
B	REVISED PER TDRR 16980	10 MAR [illegible]	[illegible]
C	REVISED PER TDRR 2[illegible]	21-[illegible]	[illegible]
D	REVISED PER TDRR 2[illegible]	22 [illegible] 6[illegible]	[illegible]



PARTIAL SECTION E-E

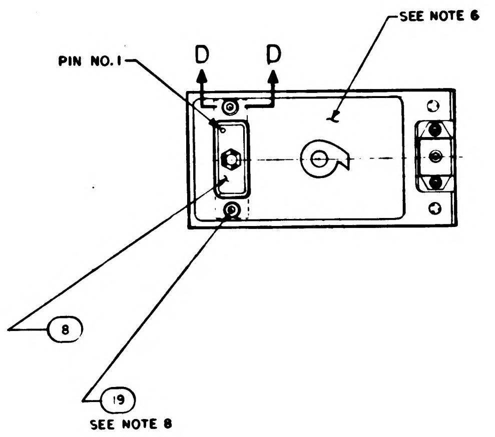
232 PLACES

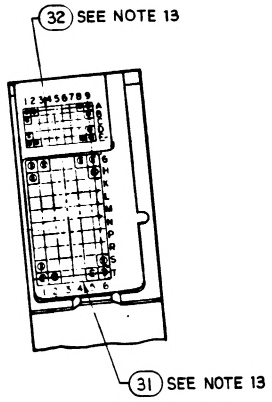


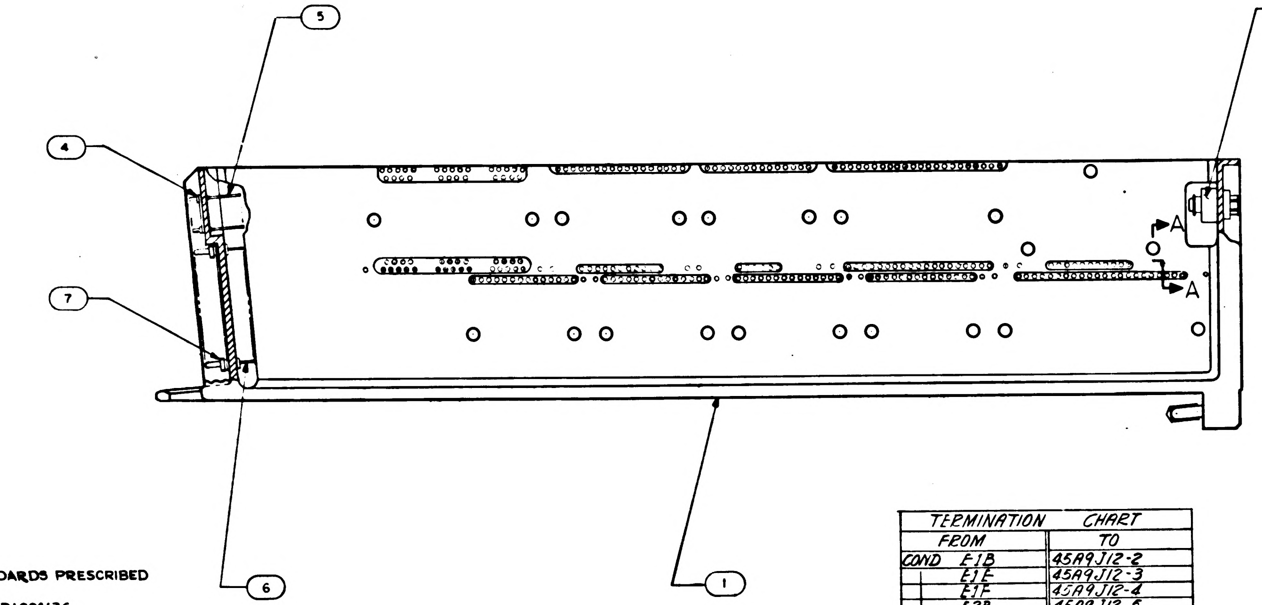


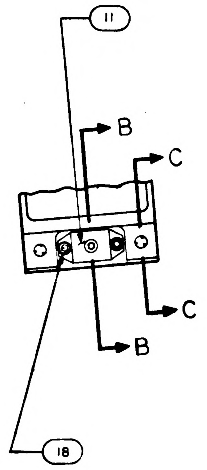
SECTION D D

SCALE 2/1





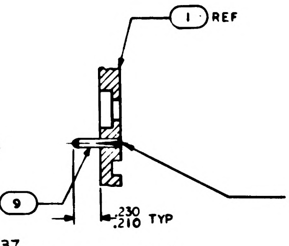




TERMINATION CHART	
FROM	TO
COND E1B	45A9J12-2
E1E	45A9J12-3
E1F	45A9J12-4
E2B	45A9J12-5
E2E	45A9J12-6
E2F	45A9J12-7

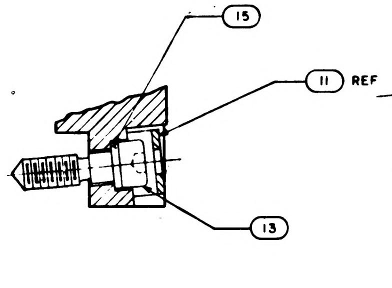
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6, AND 7 PER ND1002136.
3. MARK PER ND1002019.
4. BOND ITEM NOS. 21,22,23,24,25 & 26 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5IN LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007149.
11. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 28 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
12. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND1002004 TYPE 1.
13. BOND ITEM NUMBERS 31 AND 32 TO ITEM NUMBERS 4 AND 7 PER ND 1002237.
14. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE 1 ADHESIVE PER ND1002004, POTTING SIDE ONLY.
15. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE 1.



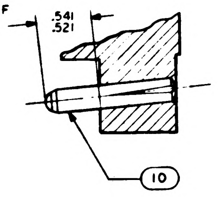
SECTION A-A

SCALE 2/1



SECTION B-B

SCALE 2/1



SECTION C-C

SCALE 2/1

QUANTITY REQUIRED								
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	
			1		32	1008553	GASKET	
			1		31	1008552	GASKET	
			1		30	1021204-007	CONTACT	
			X		29	1010231	WIRING DIAGRAM	
			AR		28	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE	
			1		27	1021205-001	RECEPTACLE, DS TYPE	
			1		26	1021209	WIRE HARNESS E	
			1		25	1015759	WIRE LIST A A	
			1		24	1015763	WIRING HARNESS D	
			1		23	1015762	WIRING HARNESS C	
			1		22	1015761	WIRING HARNESS B	
			1		21	1015760	WIRING HARNESS A	
			2		20	MS21045 C04	NUT, SELF LOCKING HEX.	
			2		19	MS16995-11	SCREW, CAP, SOCKET HEAD	
			2		18	MS16995-10	SCREW, CAP, SOCKET HEAD	
			~~21~~		~~17~~	~~MS171433~~	~~PIN SPRING~~	
			~~21~~		~~16~~	~~1004207~~	~~DRIVE CYLINDER~~	
			1		15	1008099-2	WASHER	
			~~42~~		~~14~~	~~1004206~~	~~WASHER THRUST~~	
			1		13	1008098	SCREW, SOCKET HEAD	
			~~21~~		~~12~~	~~1008095~~	~~SCREW, JACK~~	
			1		11	1001317	RETAINER, JACK SCREW	
			2		10	1010620-2	PIN, GUIDE	
			20		9	MS16556-604	PIN, GUIDE	
			1		8	1010622-1	CONNECTOR, RECEPTACLE	
			60		7	1010383-1	INSULATOR, WRAPOST MALE	
			60		6	1010382-1	CONTACT, BLADE EDGE CONNECTOR	
			45		5	1006782-2	CONTACT, WRAPOST MALE	
			45		4	1006775	INSULATOR, WRAPOST MALE	
			232		3	1006781-2	CONTACT, WRAPOST FEMALE	
			232		2	1006774	INSULATOR, WRAPOST FEMALE	
			1		1	1008179	FRAME	

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021229-011	1021207-011	011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	+.02	+1°
- —	-.02	-1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN E. Bil[illegible] DATE 2 JUNE 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 JUN 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

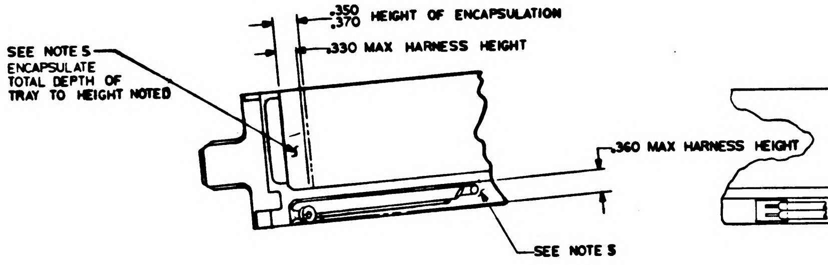
FRAME ASSEMBLY
TRAY 9

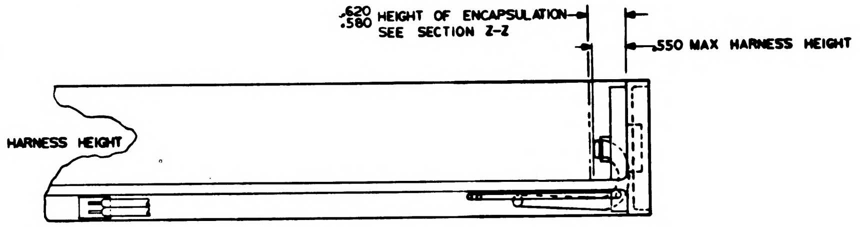
CODE IDENT NO 80230
SIZE E
1021219
SCALE 1:1
SHEET 10-[illegible]

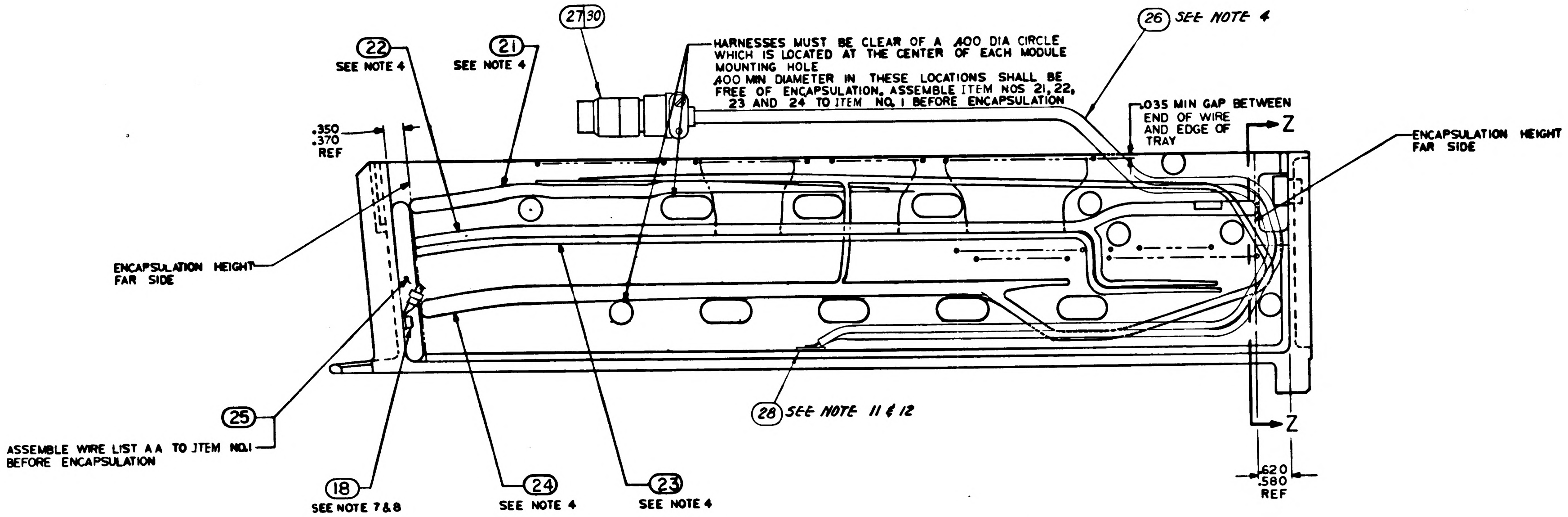
1021219 D

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

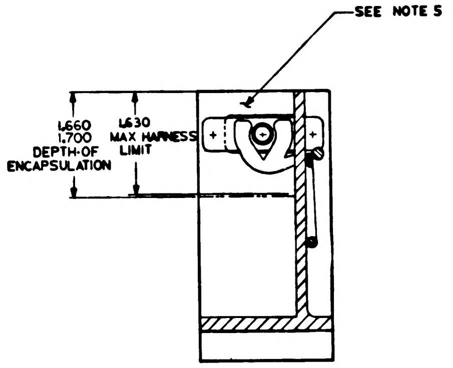
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
D	REVISION STATUS CHANGED	[illegible]	[illegible]


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

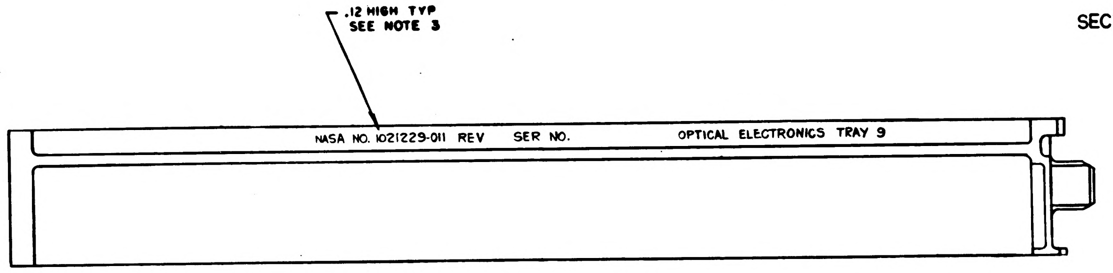

.620
.580 HEIGHT OF ENCAPSULATION
SEE SECTION Z-Z
.550 MAX HARNESS HEIGHT


27 30
22 SEE NOTE 4
21 SEE NOTE 4
HARNESSES MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NOS 21, 22, 23 AND 24 TO ITEM NO. 1 BEFORE ENCAPSULATION
26 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
ENCAPSULATION HEIGHT FAR SIDE
.350
.370
REF
ENCAPSULATION HEIGHT FAR SIDE
28 SEE NOTE 11 & 12
Z
25
ASSEMBLE WIRE LIST AA TO ITEM NO.1 BEFORE ENCAPSULATION
18 SEE NOTE 7 & 8
24 SEE NOTE 4
23 SEE NOTE 4
.620
.580
REF

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.660
1.700
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021229-011 REV SER NO. OPTICAL ELECTRONICS TRAY 9

MARKING VIEW AFTER ENCAPSULATION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1021229-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

DRAWN E. Gilson DATE 2 JUNE 64
CHECKED 5 JUN 64
APPROVAL R. Cushing 6/5/64
APPROVAL 8 JUNE 64
3 JULY 64
NASA APPROVAL
MIT APPROVAL W. Kupfer 14 [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

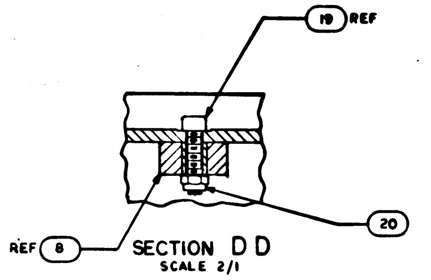
FRAME ASSEMBLY
TRAY 9

CODE IDENT NO	SIZE	NASA DRAWING NO
80230	E	1021219

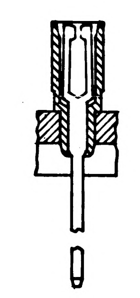
SCALE 1/1 WT SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

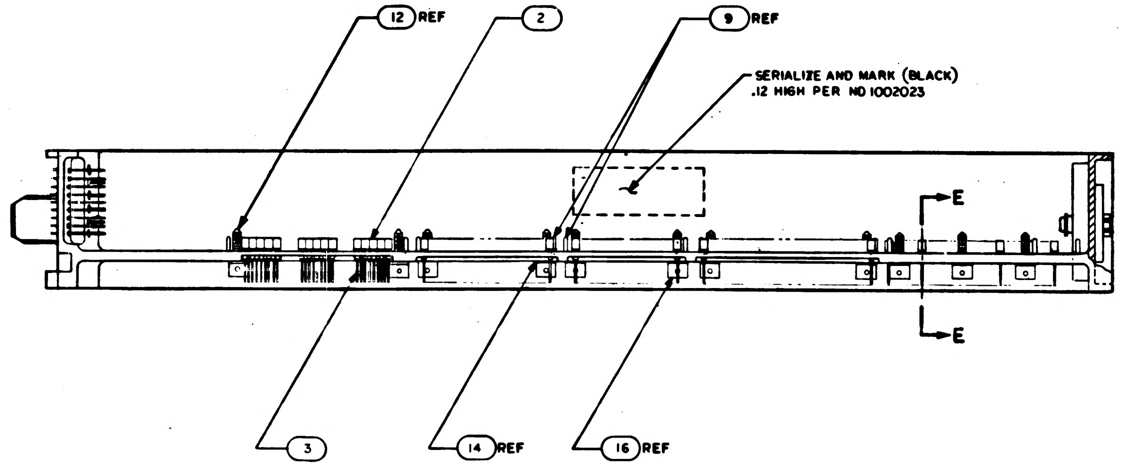
REVISIONS TQOR 10407			
SYM	DESCRIPTION	DATE	APPROVAL

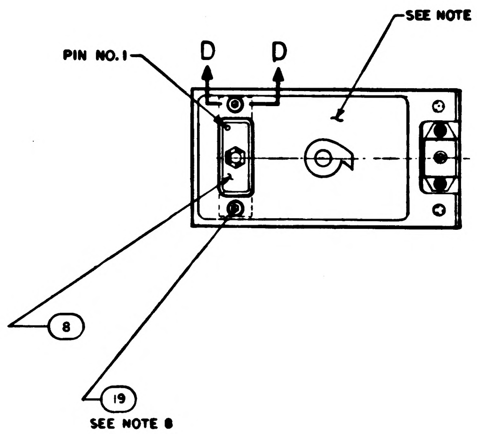


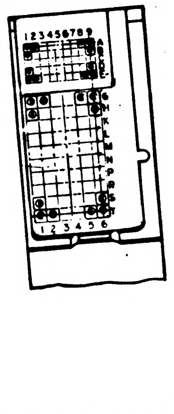
SECTION D D
SCALE 2/1

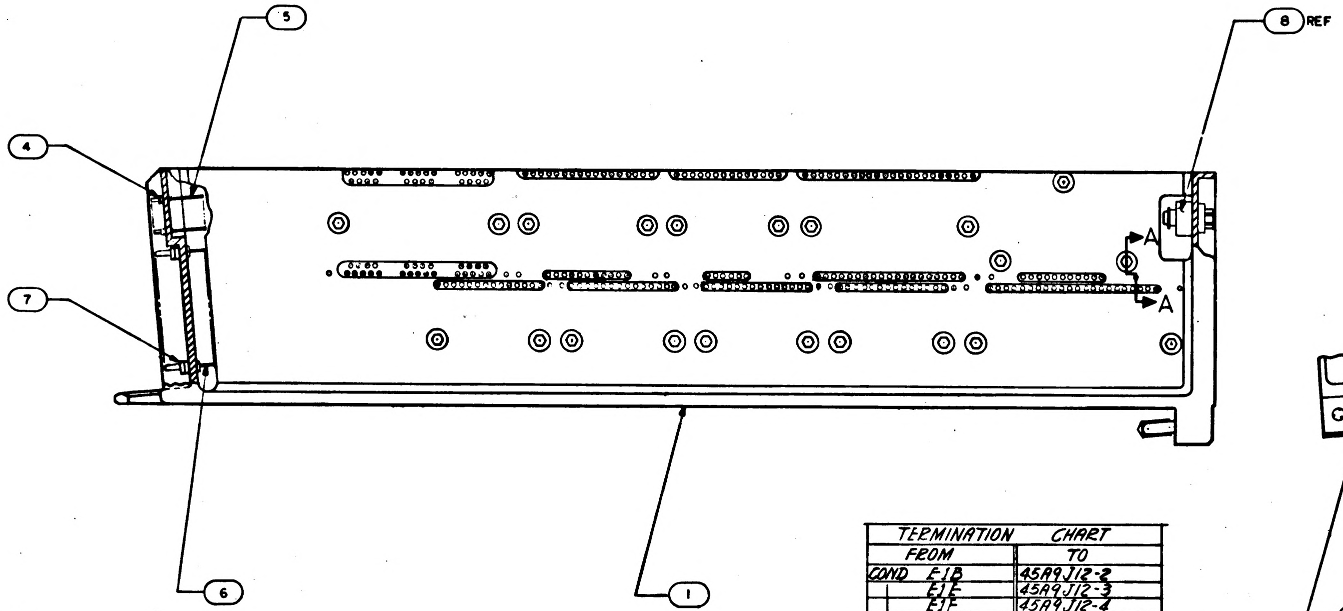


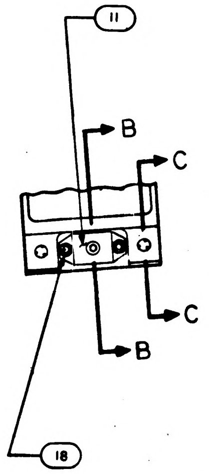
PARTIAL SECTION E-E
232 PLACES







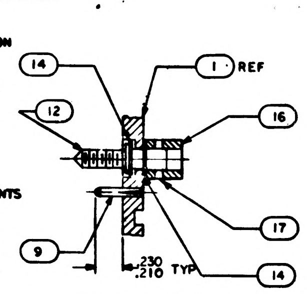




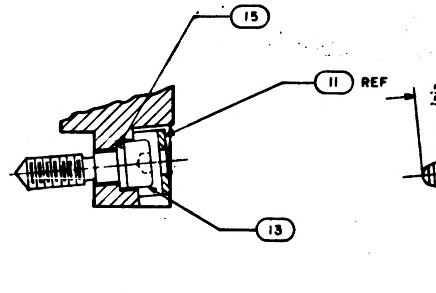
TERMINATION	CHART
FROM	TO
COND E1B	45A9 J12-2
E1E	45A9 J12-3
E1F	45A9 J12-4
E2B	45A9 J12-5
E2E	45A9 J12-6
E2F	45A9 J12-7

NOTES:

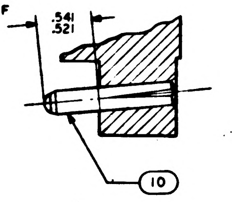
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE ITEM NUMBERS 2,3,4,5,6 AND 7 PER ND 1002136
3. MARK PER ND 1002019
4. BOND ITEM NOS 21,22,23,24,25 & 26 TO ITEM NO.1 PER ND1002004 AS NECESSARY.
5. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM) FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME
6. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE
7. COAT THREADS OF ITEM NO.18 DURING ASSEMBLY TO ITEM NO.1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER)
8. MOUNTING TORQUE FOR ITEM NOS. 18 & 19 TO ITEM NO.1 TO BE 5.0/5.5 IN LB
9. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND 1002005. ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571 Sn 60. ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS
10. PROCURE PER PS1007149.
11. PRIOR TO INSTALLATION OF ITEM NO. 26 COVER ITEM NO. 28 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
12. AFTER INSTALLATION OF ITEM NO. 26 COVER UNINSULATED SURFACES OF ITEM NO. 26 WITH ND1002004 TYPE 1.



SECTION A-A
SCALE 2/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

MASTER

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		30	1021204-007	CONTACT
			X		29	1010099	WIRING DIAGRAM
			AR		28	MIL-I-15126	MYLAR TAPE TYPE MFT 2.5, .38 WIDE
			1		27	1021205-001	RECEPTACLE, DS TYPE
			1		26	1021209	WIRE HARNESS E
			1		25	1015759	WIRE LIST A A
			1		24	1015763	WIRING HARNESS D
			1		23	1015762	WIRING HARNESS C
			1		22	1015761	WIRING HARNESS B
			1		21	1015760	WIRING HARNESS A
			2		20	MS21045 C04	NUT, SELF LOCKING HEX.
			2		19	MS16995-11	SCREW, CAP, SOCKET HEAD
			2		18	MS16995-10	SCREW, CAP, SOCKET HEAD
			21		17	MS171433	PIN SPRING
			21		16	1004207	DRIVE CYLINDER
			1		15	1008099-2	WASHER
			42		14	1004206	WASHER THRUST
			1		13	1008098	SCREW, SOCKET HEAD
			21		12	1008095	SCREW, JACK
			1		11	1001317	RETAINER, JACK SCREW
			2		10	1010620-2	PIN, GUIDE
			20		9	1010620-1	PIN, GUIDE
			1		8	1010622-1	CONNECTOR, RECEPTACLE
			60		7	1010383	INSULATOR WRAPOST MALE
			60		6	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			45		5	1006782-2	CONTACT WRAPOST MALE MIN
			45		4	1006775	INSULATOR, WRAPOST MALE MIN
			232		3	1006781-2	CONTACT, WRAPOST FEMALE MIN
			232		2	1006774	INSULATOR, WRAPOST FEMALE MIN
			1		1	1008179	FRAME

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

1021229-011	1021207-011	011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+.02	+1°
−	−.02	−1°

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN 2 JUNE 64 DATE
CHECKED 5 JUN 64
APPROVAL 6/15/64
APPROVAL
NASA APPROVAL
MIT APPROVAL 14/6/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

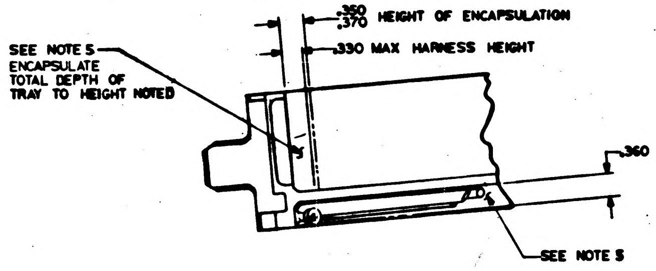
FRAME ASSEMBLY
TRAY 9

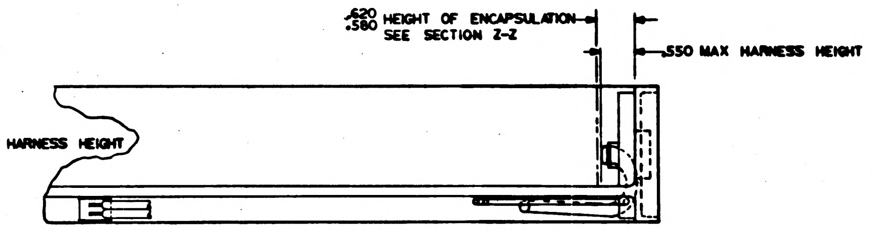
CODE IDENT NO. SIZE 1021219
SCALE 1:1 SHEET 1 OF 2

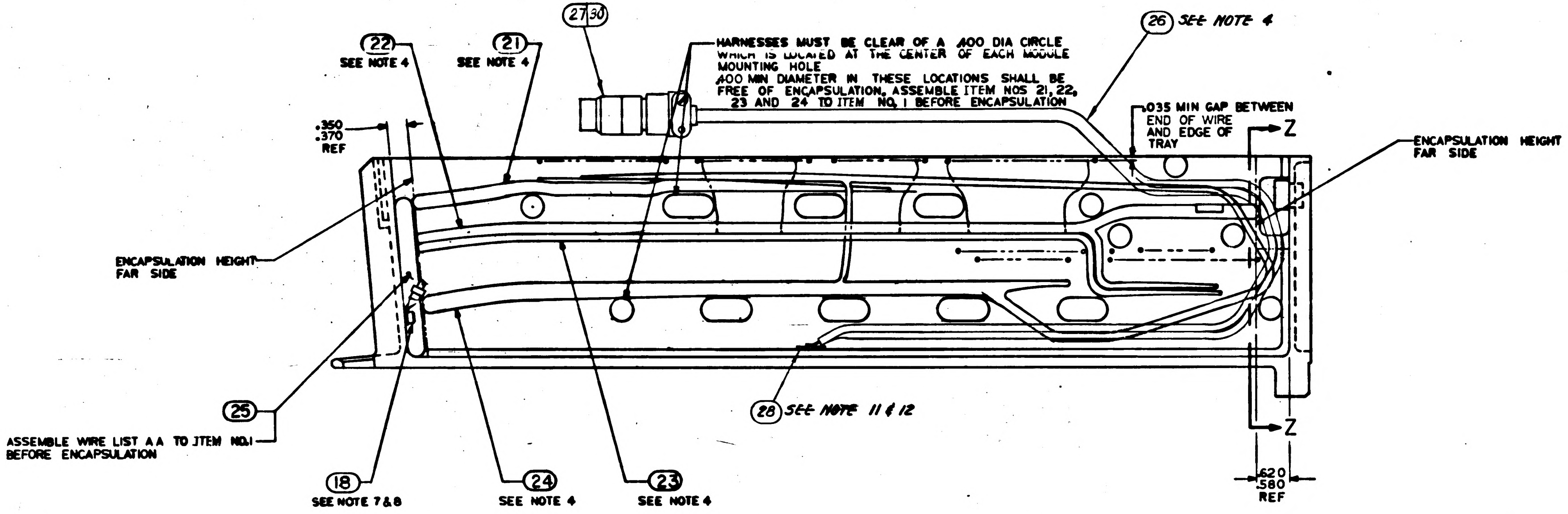
[illegible]

REVISIONS TDRR 10907

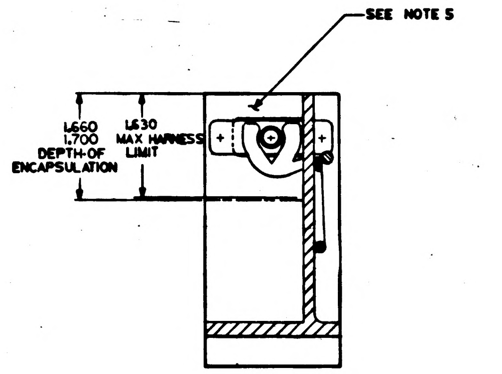
SYM	DESCRIPTION	DATE	APPROVAL


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 5
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 5

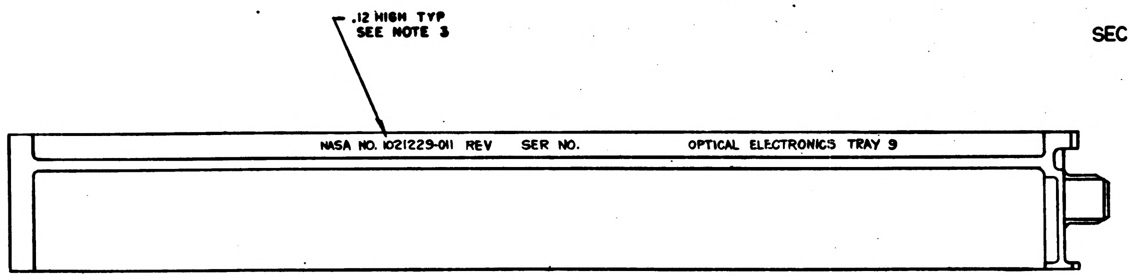

.620
.580 HEIGHT OF ENCAPSULATION
SEE SECTION Z-Z
.550 MAX HARNESS HEIGHT


22
SEE NOTE 4
21
SEE NOTE 4
27 30
HARNESSES MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE
.400 MIN DIAMETER IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION, ASSEMBLE ITEM NOS 21, 22, 23 AND 24 TO ITEM NO. 1 BEFORE ENCAPSULATION
26 SEE NOTE 4
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
ENCAPSULATION HEIGHT FAR SIDE
.350
.370
REF
ENCAPSULATION HEIGHT FAR SIDE
28 SEE NOTE 11 & 12
Z
25
ASSEMBLE WIRE LIST AA TO ITEM NO.1 BEFORE ENCAPSULATION
18
SEE NOTE 7 & 8
24
SEE NOTE 4
23
SEE NOTE 4
.620
.580
REF

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 9


SEE NOTE 5
1.660
1.700
DEPTH OF ENCAPSULATION
1.630
MAX HARNESS LIMIT

SECTION Z-Z


.12 HIGH TYP
SEE NOTE 3
NASA NO. 1021229-011 REV SER NO. OPTICAL ELECTRONICS TRAY 9

MARKING VIEW AFTER ENCAPSULATION

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1021229-011	1021207-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
Cambridge, Mass
Contract NAS 9-497
DRAWN [illegible] DATE [illegible] 64
CHECKED [illegible] 5 [illegible] 64
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

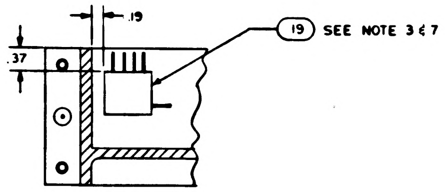
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 9

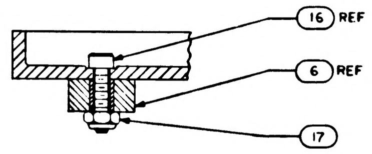
CODE IDENT. NO. | SIZE E | NASA DRAWING NO. 1021219
SCALE 1/1 | WT | SHEET 2 OF 2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

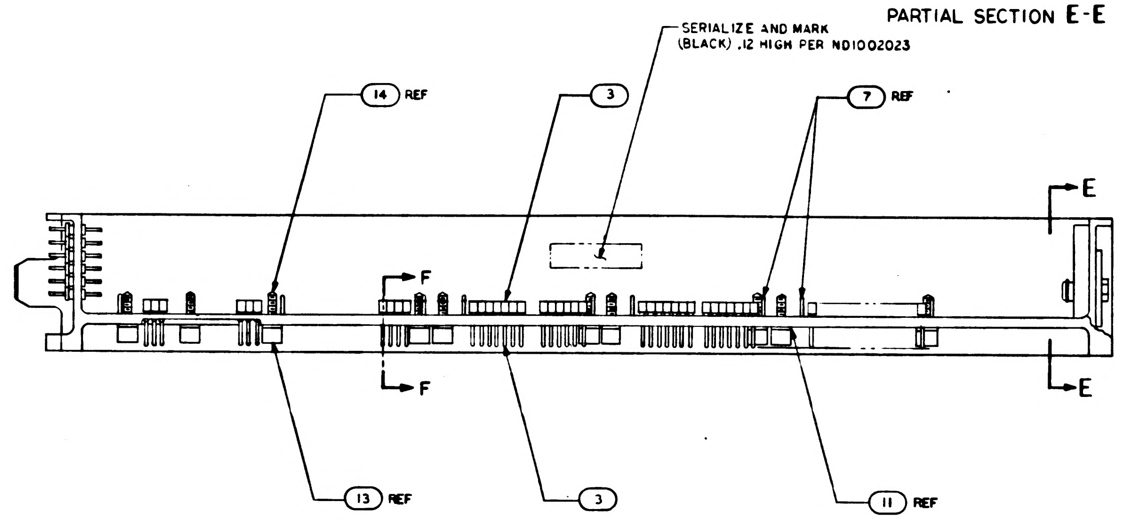
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 66	J K

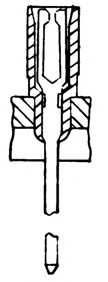


PARTIAL SECTION E-E

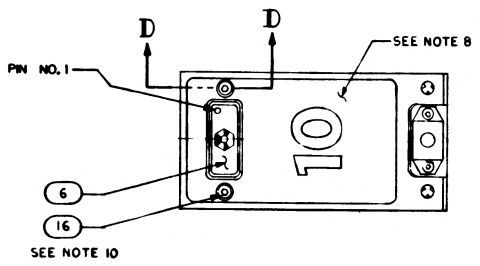


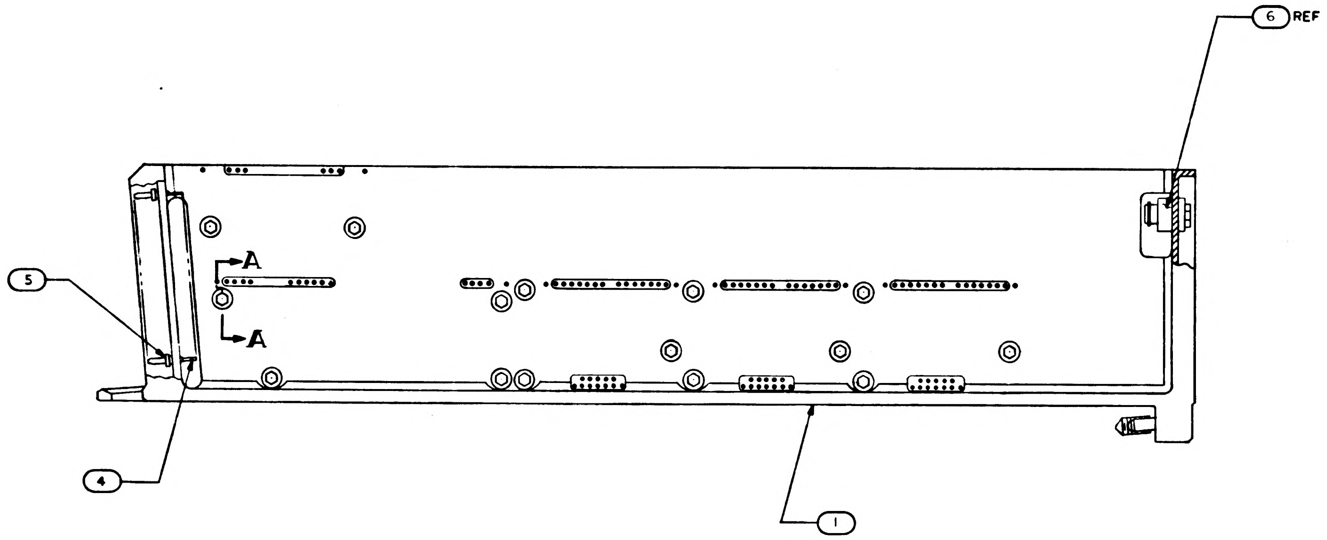
PARTIAL SECTION D-D
SCALE 2/1

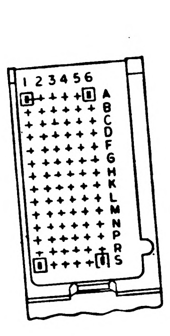


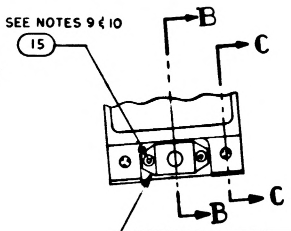


PARTIAL SECTION F-F
98 PLACES



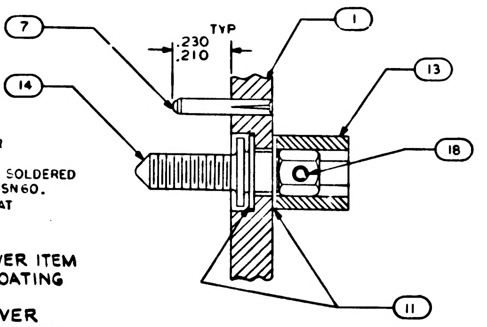




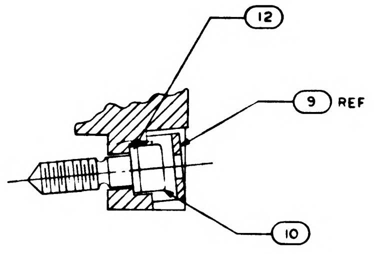


NOTES:

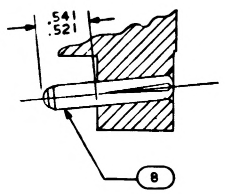
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019, WHITE.
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND DWG 1010686.
4. ASSEMBLE ITEM NUMBERS 2, 3, 4 AND 5 PER ND1002136.
5. BOND ITEMS 20, 21, 22 AND 23 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND 1002002 (BLACK POLYURETHANE FOAM), FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL, INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 15 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER).
10. MOUNTING TORQUE FOR ITEM NUMBERS 15 AND 16 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005.
    ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
    ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007150
13. PRIOR TO INSTALLATION OF ITEM NUMBER 23, COVER ITEM NUMBER 25 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
14. AFTER INSTALLATION OF ITEM NUMBER 23, COVER UNINSULATED SURFACES OF ITEM NUMBER 23 WITH ND1002004, TYPE 1.



SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A10E8	45A10J1-24
45A10E9	45A10J1-17
45A10E10	45A10J1-32
45A10E11	45A10J1-2
45A10E12	45A10J1-10
45A10E13	45A10J1-11
45A10E16	45A10J1-27
45A10E17	45A10J1-28
COND C1B	45A10J8-2
C1E	45A10J8-3
C1F	45A10J8-4
C2B	45A10J8-5
C2E	45A10J8-6
C2F	45A10J8-7

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		27	1021204-007	CONTACT
			☒		26	1008457	WIRING DIAGRAM
			AR		25	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5 .38 WIDE
			1		24	1021205-001	RECEPTACLE, DS TYPE
			1		23	1021210	WIRING HARNESS C
			1		22	1015771	WIRE LIST AA
			1		21	1015770	WIRING HARNESS B
			1		20	1015769	WIRING HARNESS A
			1		19	1007093	BUFFER RESISTORS MODULE ASSY
			15		18	MS171433	PIN, SPRING
			2		17	MS21045C04	NUT, HEX, SELF LOCKING
			2		16	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		15	MS16995-10	SCREW, CAP, SOCKET HEAD
			15		14	1008095	SCREW, JACK
			15		13	1004207	DRIVE CYLINDER
			1		12	1008099-2	WASHER
			30		11	1004206	WASHER, THRUST
			1		10	1008098	SCREW, SOCKET HEAD
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			10		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			98		3	1006781-2	CONTACT, WRAPOST, FEMALE, MIN.
			98		2	1006774	INSULATOR, WRAPOST, FEMALE, MIN.
			1		1	1008110	FRAME

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021230-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN C. Long DATE 3 JUN 64
CHECKED [illegible] 5 JUN 64
APPROVAL [illegible] 6/5/64
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

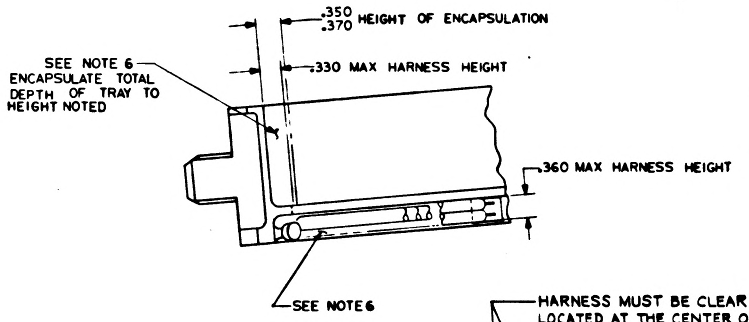
FRAME ASSEMBLY
TRAY 10

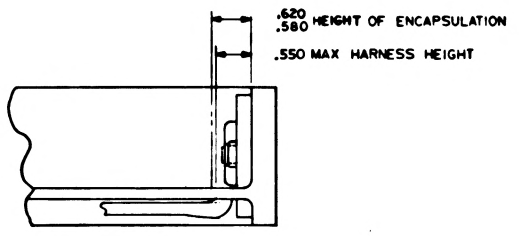
CODE IDENT NO
SIZE A
1021220
SCALE 1:1
SHEET 1 OF 2

1021220 A

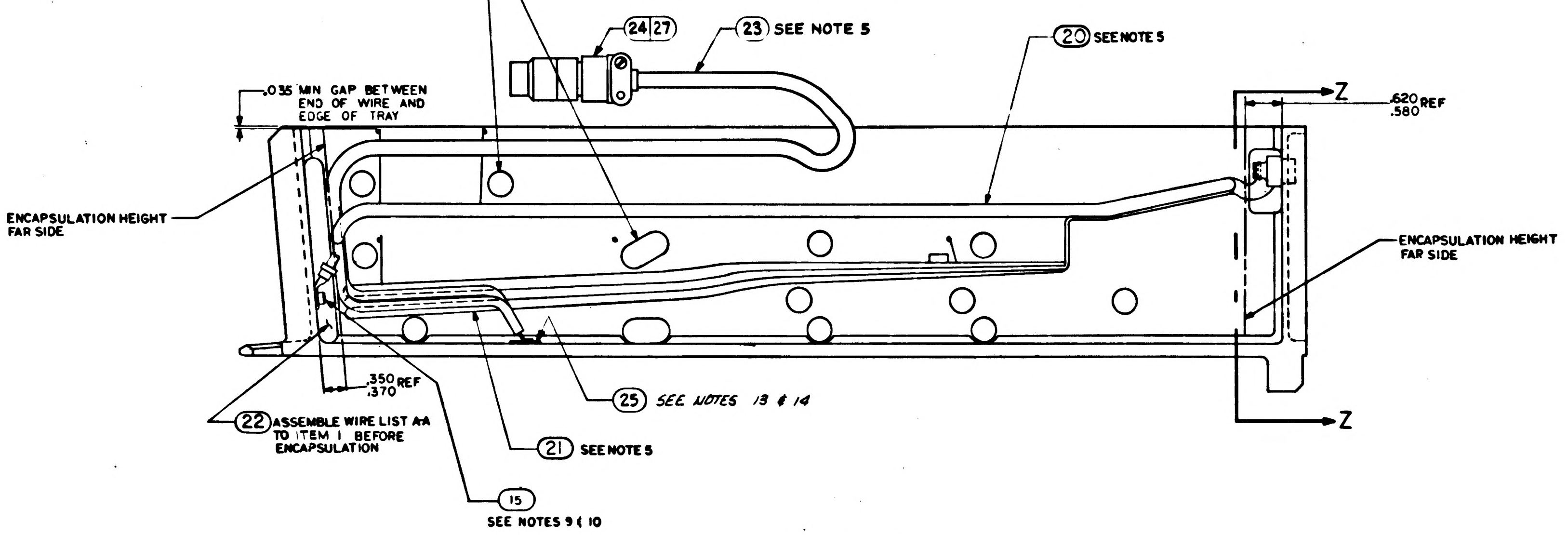
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	23 NOV 64	

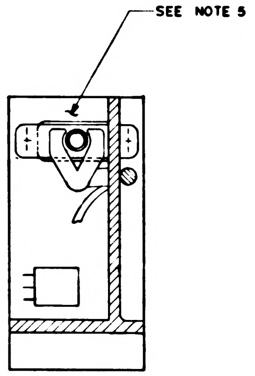

.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

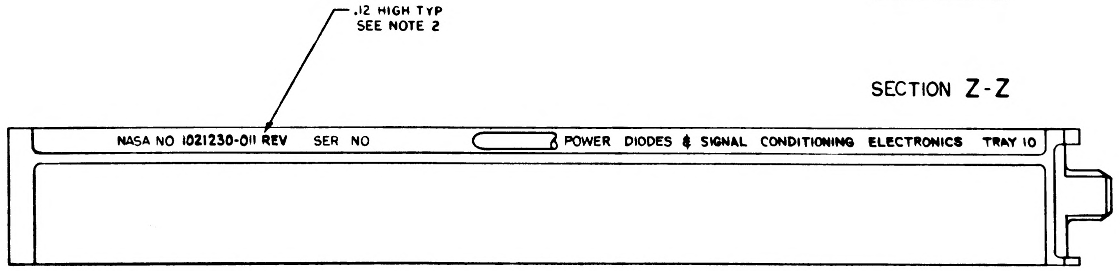
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 20, 21 & 23 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.


24 27
23 SEE NOTE 5
20 SEE NOTE 5
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
.350
.370 REF
25 SEE NOTES 13 & 14
22 ASSEMBLE WIRE LIST A-A TO ITEM 1 BEFORE ENCAPSULATION
21 SEE NOTE 5
15
SEE NOTES 9 & 10
Z

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO 1021230-011 REV SER NO
POWER DIODES & SIGNAL CONDITIONING ELECTRONICS TRAY 10

MARKING VIEW AFTER ENCAPSULATION

1021230-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS —//— DECIMALS ±.005 ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-4237
DRAWN C. Long DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 Jun 64
NASA APPROVAL 7/1/64
MIT APPROVAL 14/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 10

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1021220
SCALE 1/1
WT
SHEET 2 OF 2

1021220 A

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REVISIONS TDRR [illegible]

SYM	DESCRIPTION	DATE	APPROVAL
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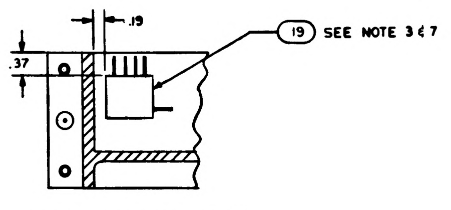
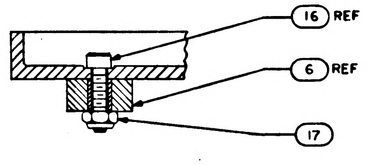
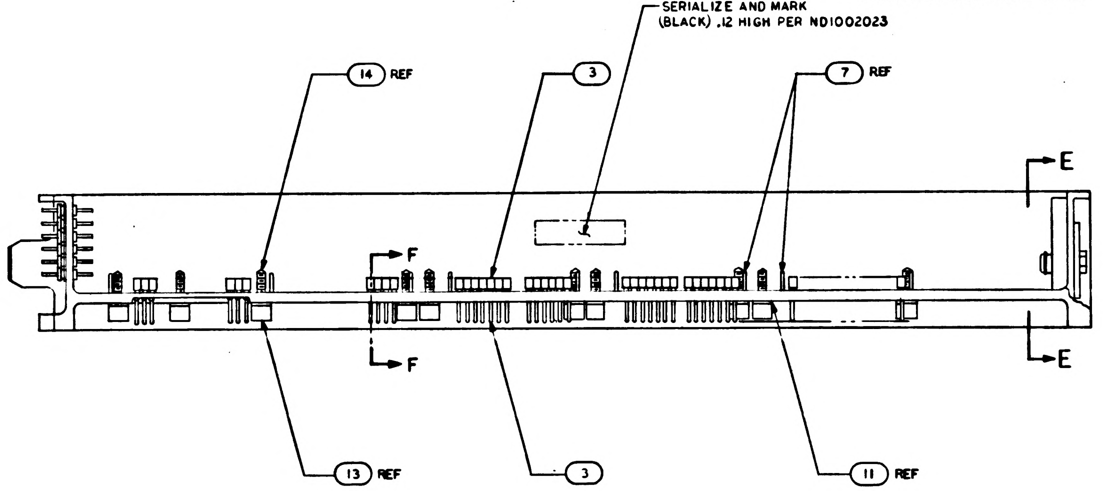
B	REVISED PER TDRR 16980	9 MAR 65	J J J

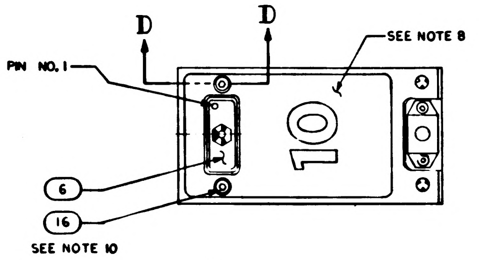


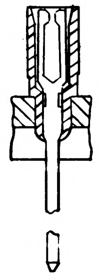
PARTIAL SECTION E-E



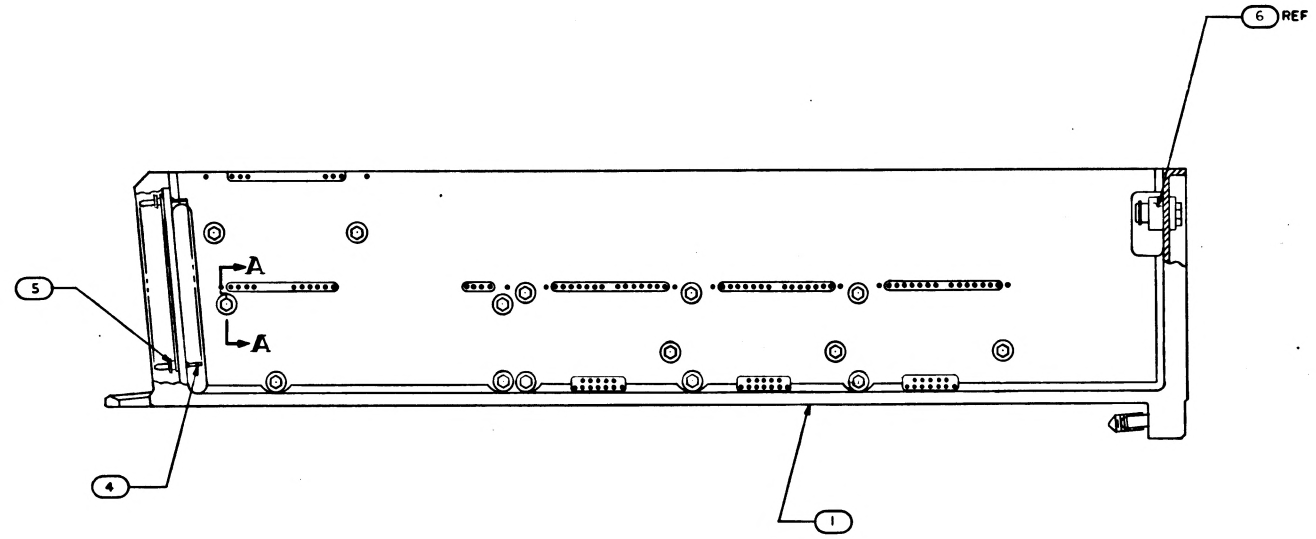
PARTIAL SECTION D-D
SCALE 2/1

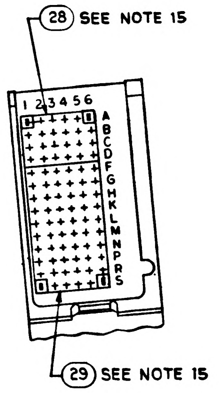


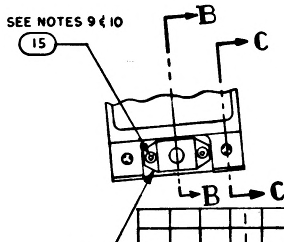




PARTIAL SECTION F-F
98 PLACES







NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019, WHITE.
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND DWG 1010686.
4. ASSEMBLE ITEM NUMBERS 2, 3, 4 AND 5 PER ND1002136.
5. BOND ITEMS 20, 21, 22 AND 23 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
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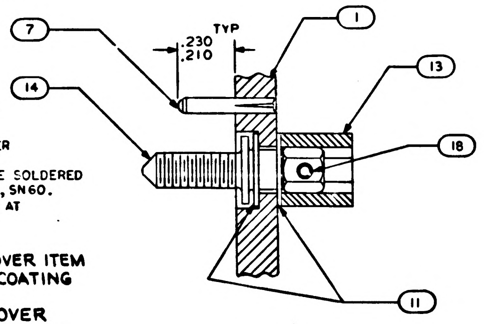
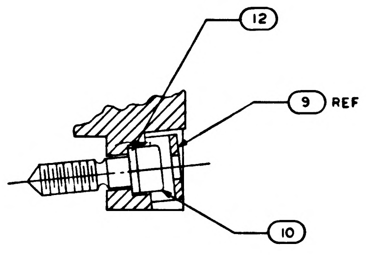
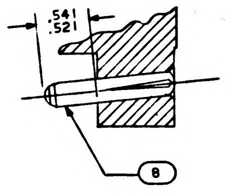
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL, INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 15 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER).
10. MOUNTING TORQUE FOR ITEM NUMBERS 15 AND 16 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005.
    ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
    ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007150
13. PRIOR TO INSTALLATION OF ITEM NUMBER 23, COVER ITEM NUMBER 25 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
14. AFTER INSTALLATION OF ITEM NUMBER 23, COVER UNINSULATED SURFACES OF ITEM NUMBER 23 WITH ND1002004, TYPE 1.
15. BOND ITEM NUMBERS 28 AND 29 TO ITEM NUMBER 5 PER ND 1002237.



SECTION AA
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART

FROM	TO
45A10E8	45A10J1-24
45A10E9	45A10J1-17
45A10E10	45A10J1-32
45A10E11	45A10J1-2
45A10E12	45A10J1-10
45A10E13	45A10J1-11
45A10E16	45A10J1-27
45A10E17	45A10J1-28
COND C1B	45A10J8-2
C1E	45A10J8-3
C1F	45A10J8-4
C2B	45A10J8-5
C2E	45A10J8-6
C2F	45A10J8-7

			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		29	1008552	GASKET
			1		28	1008551	GASKET
			1		27	1021204-007	CONTACT
			☒		26	1008457	WIRING DIAGRAM
			AR		25	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5
							.38 WIDE
			1		24	1021205-001	RECEPTACLE, DS TYPE
			1		23	1021210	WIRING HARNESS C
			1		22	1015771	WIRE LIST AA
			1		21	1015770	WIRING HARNESS B
			1		20	1015769	WIRING HARNESS A
			1		19	1007093	BUFFER RESISTORS MODULE ASSY
			15		18	MS171433	PIN, SPRING
			2		17	MS21045C04	NUT, HEX, SELF LOCKING
			2		16	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		15	MS16995-10	SCREW, CAP, SOCKET HEAD
			15		14	1008095	SCREW, JACK
			15		13	1004207	DRIVE CYLINDER
			1		12	1008099-2	WASHER
			30		11	1004206	WASHER, THRUST
			1		10	1008098	SCREW, SOCKET HEAD
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			10		7	1010620-1	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MALE
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			98		3	1006781-2	CONTACT, WRAPOST, FEMALE, MIN.
			98		2	1006774	INSULATOR, WRAPOST, FEMALE, MIN.
			1		1	1008110	FRAME

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021230-011	1021207-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS +— DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN C. Long DATE 3 JUN 64
CHECKED 5 JUL 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 10

CODE IDENT NO. SIZE 1021220
SCALE 1:1 SHEET 1 OF 2

1021220 B

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 1 9C

SYM	DESCRIPTION	DATE	APPROVAL
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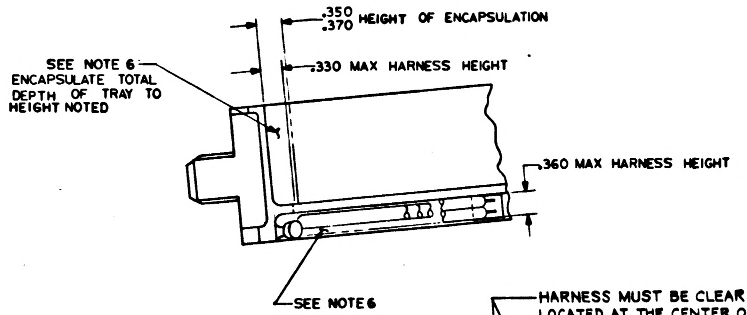
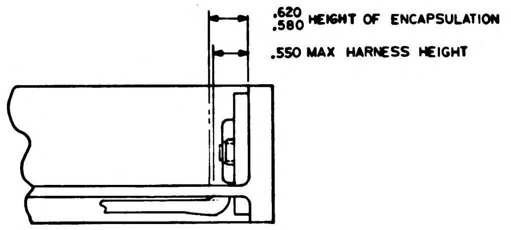
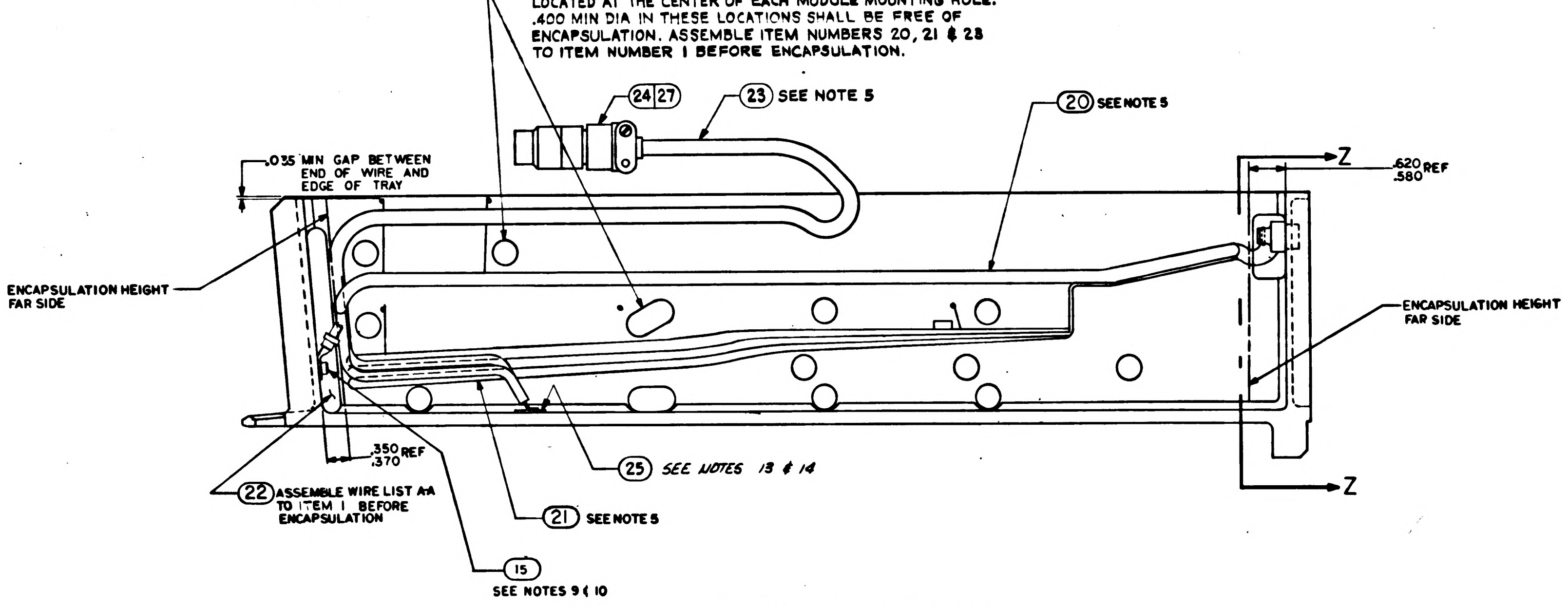
B	REVISED PER TDRR 16980	9 MAR 65	J

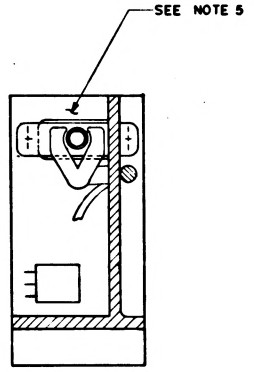

.350
.370 HEIGHT OF ENCAPSULATION
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.330 MAX HARNESS HEIGHT
.360 MAX HARNESS HEIGHT
SEE NOTE 6


.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT

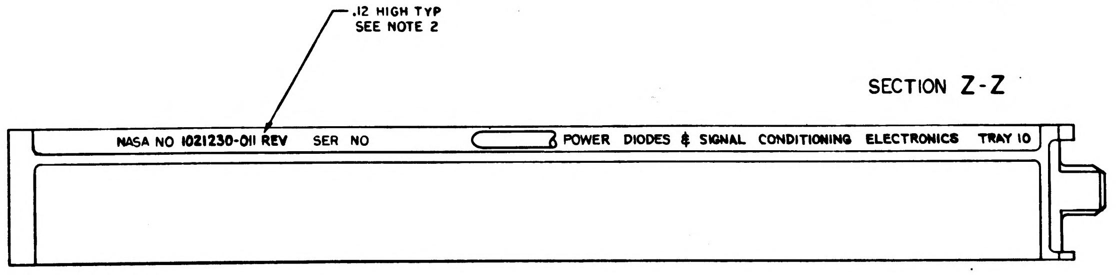
HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 20, 21 & 23 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.


24 27
23 SEE NOTE 5
20 SEE NOTE 5
Z
.620
.580 REF
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
.350
.370 REF
25 SEE NOTES 13 & 14
Z
22 ASSEMBLE WIRE LIST AA TO ITEM 1 BEFORE ENCAPSULATION
21 SEE NOTE 5
15
SEE NOTES 9 & 10

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z


.12 HIGH TYP
SEE NOTE 2
NASA NO 1021230-011 REV SER NO
POWER DIODES & SIGNAL CONDITIONING ELECTRONICS TRAY 10

MARKING VIEW AFTER ENCAPSULATION

1021230-011	1021207-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS —//— DECIMALS ±.005 ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-4065
DRAWN C. Long DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 6 Jun 64
D. A. [illegible] 8 JUL 64
NASA APPROVAL W. S. 7/14/64
MIT APPROVAL W. [illegible] 14/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 10

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1021220
SCALE 1/1
WT
SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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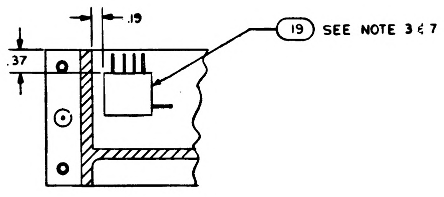
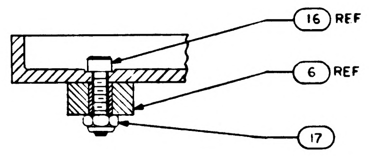
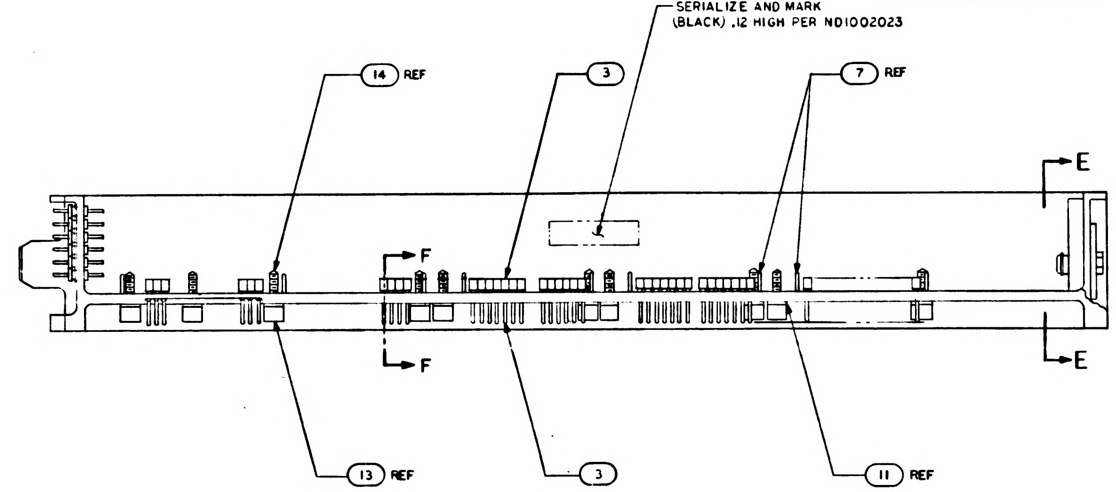
B	REVISED PER TDRR 16980	9 MAR 65	
C	REVISED PER TDRR 20118	21-JUN 65	

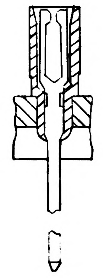


PARTIAL SECTION E-E

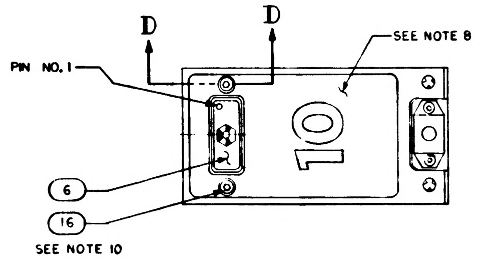


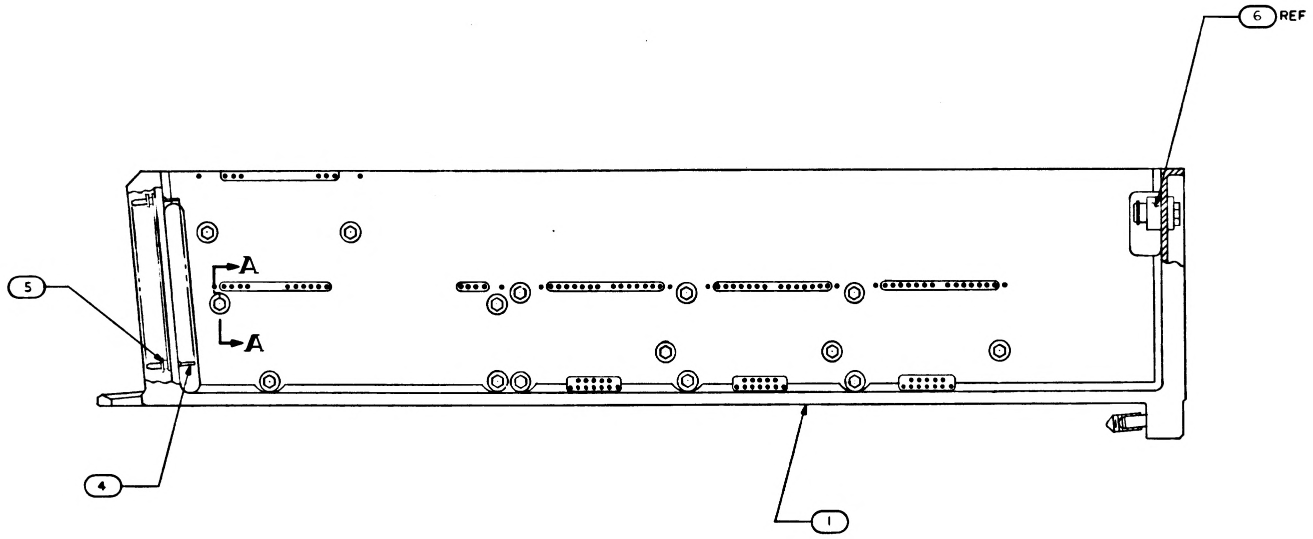
PARTIAL SECTION D-D
SCALE 2/1

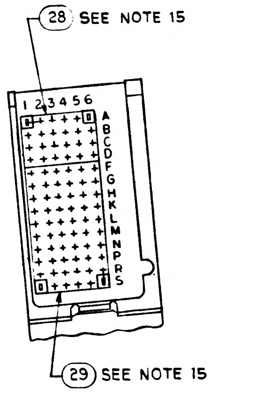


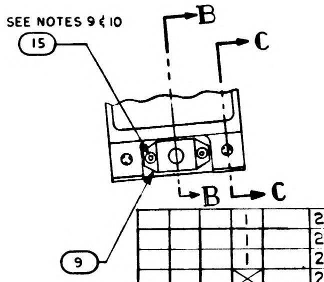


PARTIAL SECTION F-F
98 PLACES



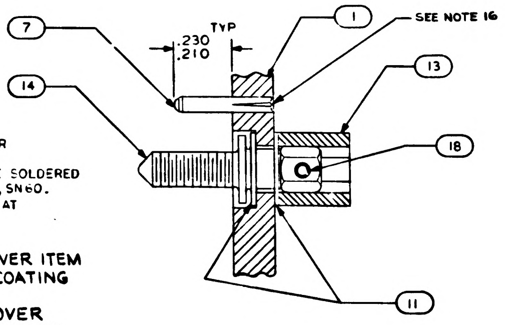




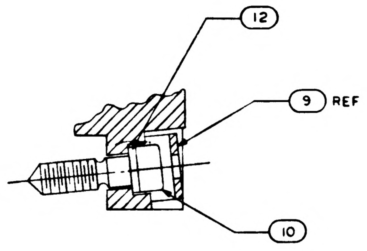


NOTES:

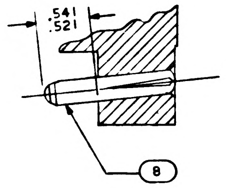
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327,
2. MARK PER ND1002019, WHITE.
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND DWG 1010686.
4. ASSEMBLE ITEM NUMBERS 2, 3, 4, AND 5 PER ND1002136.
5. BOND ITEMS 20, 21, 22 AND 23 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002236, SECTION 3.6, CURE CYCLE A USING 1012503, .010 ABOVE TO .050 BELOW PERIPHERAL SURFACES OF TRAY FRAME AND A MINIMUM DEPTH OF .010 ENCAPSULATION OVER ANY COMPONENT. PRIMER TO EXTEND BEYOND ENCAPSULATION MATERIAL, BUT NOT TO EXCEED .188 MAX. MODULE MOUNTING SURFACE TO BE FREE OF PRIMER.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL, INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 15 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER).
10. MOUNTING TORQUE FOR ITEM NUMBERS 15 AND 16 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005.
 ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
 ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007150
13. PRIOR TO INSTALLATION OF ITEM NUMBER 23, COVER ITEM NUMBER 25 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
14. AFTER INSTALLATION OF ITEM NUMBER 23, COVER UNINSULATED SURFACES OF ITEM NUMBER 23 WITH ND1002004, TYPE 1.
15. BOND ITEM NUMBERS 28 AND 29 TO ITEM NUMBER 5 PER ND 1002237.
16. FILL MODULE GUIDE PIN HOLES AND ANY ASSOCIATED CRACKS IN PLATING (AFTER, GUIDE PIN INSERTION) USING TYPE 1 ADHESIVE PER ND1002004, POTTING SIDE ONLY.
17. COAT 1010622 OR 1010821 CONNECTOR SOCKET HOLES (WITH AND WITHOUT WIRES) WITH ND1002009 METHOD D. SEAL OPENING BETWEEN FRAME AND CONNECTOR WITH ND1002004 TYPE 1.



SECTION AA
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A10E8	45A10J1-24
45A10E9	45A10J1-17
45A10E10	45A10J1-32
45A10E11	45A10J1-2
45A10E12	45A10J1-10
45A10E13	45A10J1-11
45A10E16	45A10J1-27
45A10E17	45A10J1-28
COND C1B	45A10J8-2
C1E	45A10J8-3
C1F	45A10J8-4
C2B	45A10J8-5
C2E	45A10J8-6
C2F	45A10J8-7

			1		29	1008552	GASKET
			1		28	1008551	GASKET
			1		27	1021204-007	CONTACT
			☒		26	1008457	WIRING DIAGRAM
			AR		25	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5
							.38 WIDE
			1		24	1021205-001	RECEPTACLE, DS TYPE
			1		23	1021210	WIRING HARNESS C
			1		22	1015771	WIRE LIST AA
			1		21	1015770	WIRING HARNESS B
			1		20	1015769	WIRING HARNESS A
			1		19	1007093	BUFFER RESISTORS MODULE ASSY
			15		18	MS171433	PIN, SPRING
			2		17	MS21045C04	NUT, HEX, SELF LOCKING
			2		16	MS16995-11	SCREW, CAP, SOCKET HEAD
			3		15	MS16995-10	SCREW, CAP, SOCKET HEAD
			15		14	1008095	SCREW, JACK
			15		13	1004207	DRIVE CYLINDER
			1		12	1008099-2	WASHER
			30		11	1004206	WASHER, THRUST
			1		10	1008098	SCREW, SOCKET HEAD
			1		9	1001317	RETAINER, JACK SCREW
			2		8	1010620-2	PIN, GUIDE
			10		7	MS16556-604	PIN, GUIDE
			1		6	1010622-1	CONNECTOR RECEPTACLE
			84		5	1010383-1	INSULATOR, WRAPOST, MAL
			84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
			98		3	1006781-2	CONTACT, WRAPOST, FEMALE M. J.
			98		2	1006774	INSULATOR, WRAPOST, FEMALE M. J.
			1		1	1008110	FRAME
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021230-011	1021207-011	-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + —
DECIMALS ±.02
ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN C. Long DATE 3 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME ASSEMBLY
TRAY 10

CODE IDENT NO 80230
SIZE E
1021220
SCALE 1:1
SHEET 1 OF 2

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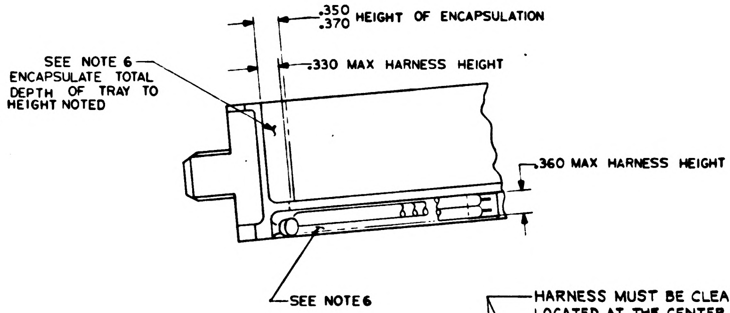
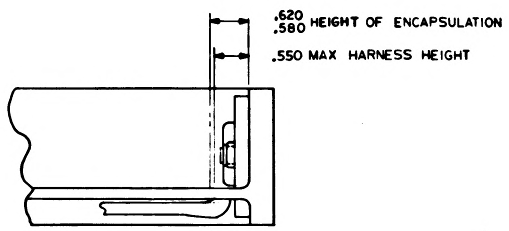
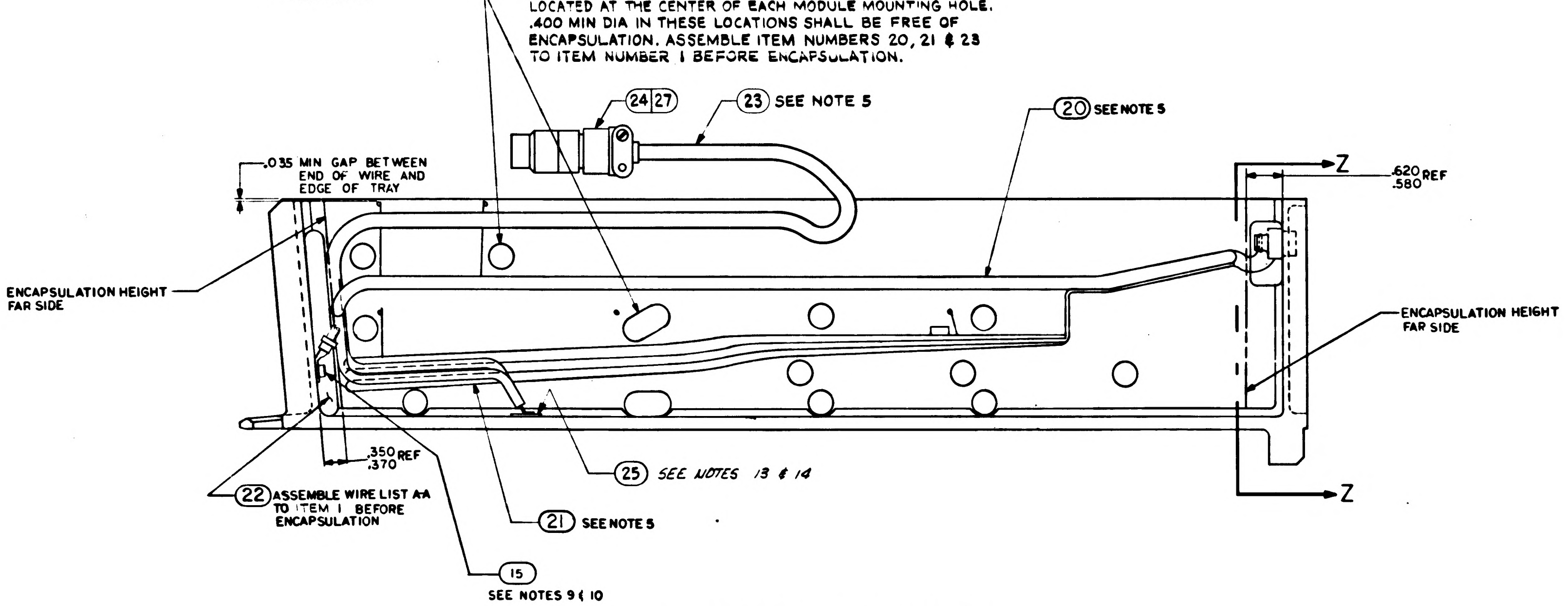
REVISIONS

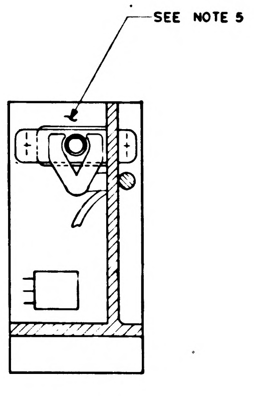
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14321	[illegible]	[illegible]
B	REVISED PER TDRR 16980	9 MAR 65	[illegible]
C	REVISON STATUS CHANCED	2 JUN 65	[illegible]


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6
ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE6

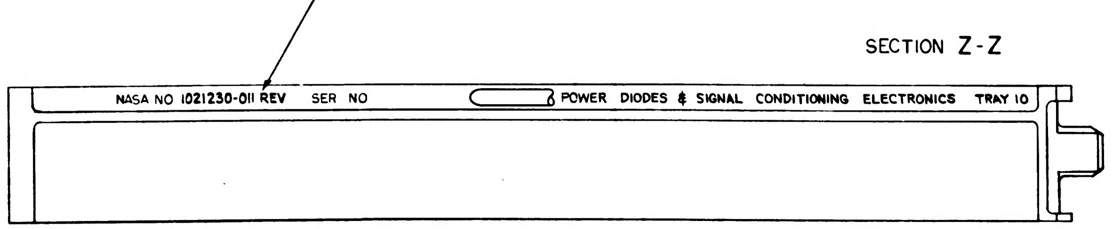

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 20, 21 & 23 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.
24 27
23 SEE NOTE 5
20 SEE NOTE 5
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
.350
.370 REF
25 SEE NOTES 13 & 14
Z
22 ASSEMBLE WIRE LIST A-A TO ITEM 1 BEFORE ENCAPSULATION
21 SEE NOTE 5
15 SEE NOTES 9 & 10

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z

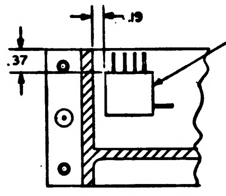

.12 HIGH TYP
SEE NOTE 2
NASA NO 1021230-011 REV SER NO POWER DIODES & SIGNAL CONDITIONING ELECTRONICS TRAY 10

MARKING VIEW AFTER ENCAPSULATION

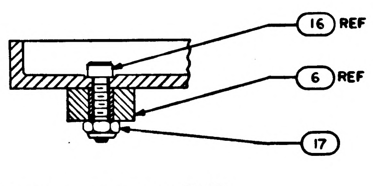
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS —‖— DECIMALS ±.005 ANGLES ± —‖— DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE MASS DWG NO CONTRACT NAS 9-4?7	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		MATERIAL —‖—	DRAWN C. Long DATE 3 JUN 64 CHECKED [illegible] 5 JUN 64 APPROVAL [illegible] 6/5/64 APPROVAL [illegible] 8 Jun 64 [illegible] 8 Jun 64	FRAME ASSEMBLY TRAY 10
1021230-011	1021207-011	HEAT TREATMENT —‖—	NASA APPROVAL [illegible] 7/1/64	CODE IDENT NO. 80230 / SIZE E / NASA DRAWING NO 1021220
NEXT ASSY	USED ON	FINAL FINISH —‖—	MIT APPROVAL [illegible] 1 July 64	SCALE 1/1 / WT / SHEET 2 OF 2
APPLICATION				

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

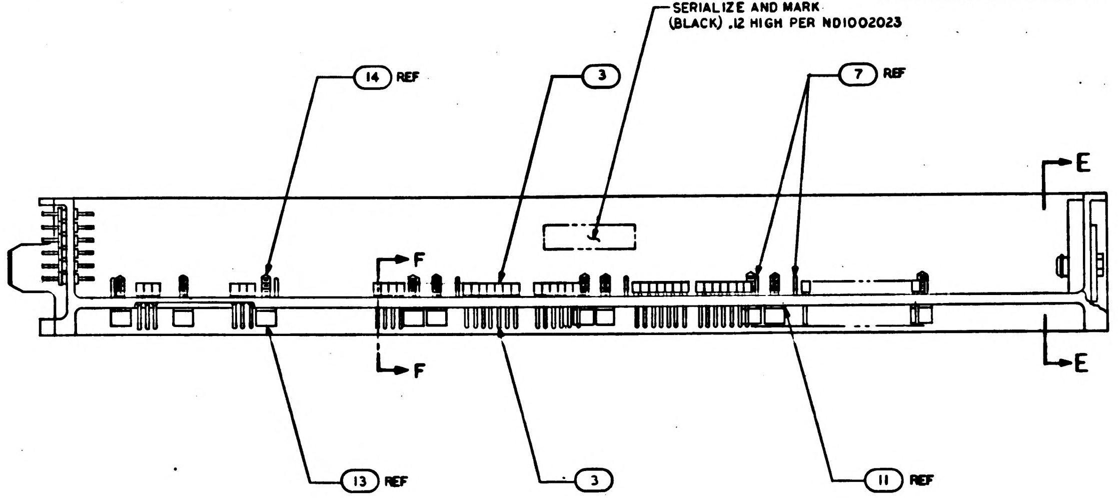
REVISIONS TQRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL

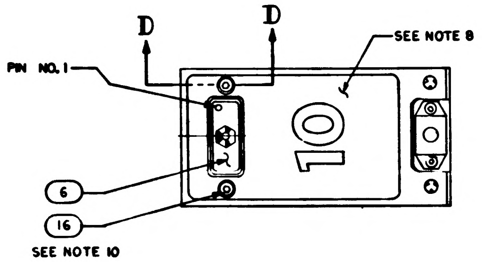


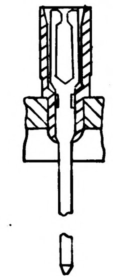
PARTIAL SECTION E-E



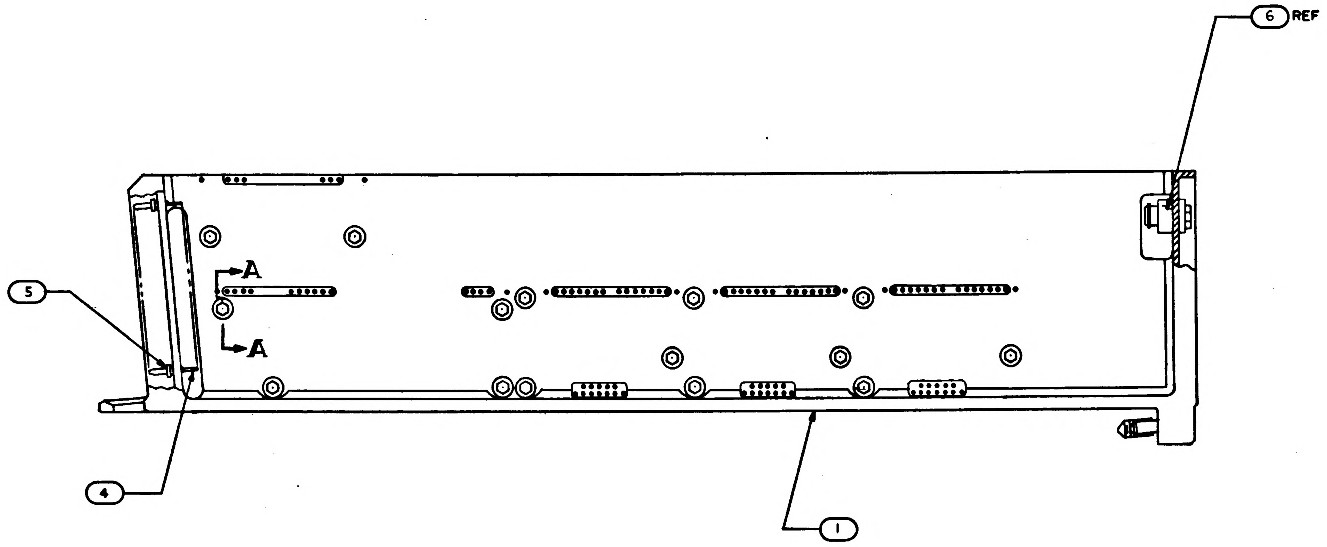
PARTIAL SECTION D-D
SCALE 2/1

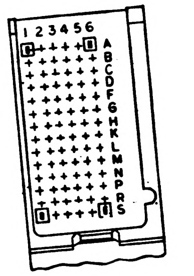


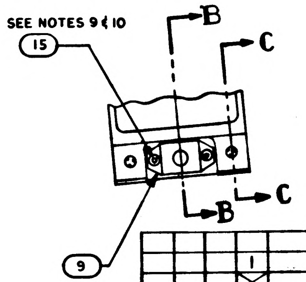




PARTIAL SECTION F-F
98 PLACES

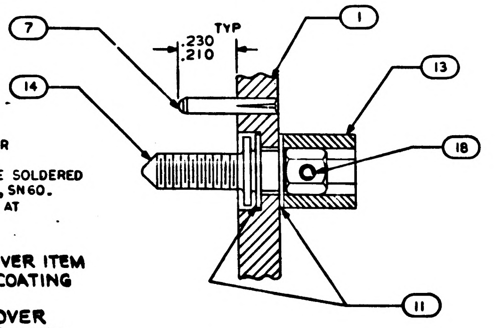




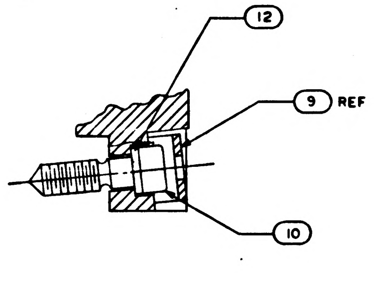


NOTES:

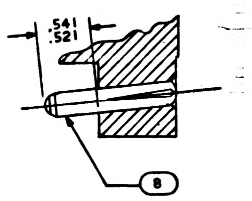
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK PER ND1002019, WHITE.
3. BOND ITEM NO. 19 TO ITEM NO. 1 PER ND1002004 USING FLEXIBLE FORMULATION OF NASA DWG 1010657 AND DWG 1010686.
4. ASSEMBLE ITEM NUMBERS 2, 3, 4 AND 5 PER ND1002136.
5. BOND ITEMS 20, 21, 22 AND 23 TO ITEM NO. 1 PER ND1002004 AS NECESSARY.
6. ENCAPSULATE PER ND1002002 (BLACK POLYURETHANE FOAM), FLUSH TO .010 BELOW PERIPHERAL SURFACES OF TRAY FRAME.
7. SEE CONDUCTOR TERMINATION CHART FOR ITEM NO. 19.
8. ALL AREAS IN THIS VIEW (FRONT END) TO BE COMPLETELY FREE OF ENCAPSULATION MATERIAL, INCLUDING CONNECTOR AND PINS IN CONNECTOR. EVIDENCE OF ENCAPSULATION MATERIAL SEEPAGE NOT PERMISSIBLE.
9. COAT THREADS OF ITEM NO. 15 DURING ASSEMBLY TO ITEM NO. 1 WITH MIL-P-8585 (WET ZINC CHROMATE PRIMER).
10. MOUNTING TORQUE FOR ITEM NUMBERS 15 AND 16 TO ITEM NO. 1 TO BE 5.0/5.5 IN. LB.
11. ALL NICKEL WIRE HARNESS TERMINATIONS TO BE WELDED PER ND1002005.
    ALL STRANDED COPPER WIRE HARNESS TERMINATIONS TO BE SOLDERED AS REQUIRED PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60.
    ALL CRIMPED CONTACT PIN TERMINATIONS TO BE INSERTED AT TERMINATION POINTS.
12. PROCURE PER PS 1007150
13. PRIOR TO INSTALLATION OF ITEM NUMBER 23, COVER ITEM NUMBER 25 AND ADJOINING AREA WITH THIN COATING OF ND1002187.
14. AFTER INSTALLATION OF ITEM NUMBER 23, COVER UNINSULATED SURFACES OF ITEM NUMBER 23 WITH ND1002004, TYPE 1.



SECTION A-A
SCALE 4/1



SECTION B-B
SCALE 2/1



SECTION C-C
SCALE 2/1

TERMINATION CHART	
FROM	TO
45A10E8	45A10J1-24
45A10E9	45A10J1-17
45A10E10	45A10J1-32
45A10E11	45A10J1-2
45A10E12	45A10J1-10
45A10E13	45A10J1-11
45A10E16	45A10J1-27
45A10E17	45A10J1-28
COND C1B	45A10J8-2
C1E	45A10J8-3
C1F	45A10J8-4
C2B	45A10J8-5
C2E	45A10J8-6
C2F	45A10J8-7

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1		27	1021204-007	CONTACT
☒		26	1010100	WIRING DIAGRAM
AR		25	MIL-I-15126	MYLAR TAPE, TYPE MFT 2.5 .38 WIDE
1		24	1021205-001	RECEPTACLE, DS TYPE
1		23	1021210	WIRING HARNESS C
1		22	1015771	WIRE LIST AA
1		21	1015770	WIRING HARNESS B
1		20	1015769	WIRING HARNESS A
1		19	1007093	BUFFER RESISTORS MODULE ASSY
15		18	MS171433	PIN, SPRING
2		17	MS21045C04	NUT, HEX, SELF LOCKING
2		16	MS16995-11	SCREW, CAP, SOCKET HEAD
3		15	MS16995-10	SCREW, CAP, SOCKET HEAD
15		14	1008095	SCREW, JACK
15		13	1004207	DRIVE CYLINDER
1		12	1008099-2	WASHER
30		11	1004206	WASHER, THRUST
1		10	1008098	SCREW, SOCKET HEAD
1		9	1001317	RETAINER, JACK SCREW
2		8	1010620-2	PIN, GUIDE
10		7	1010620-1	PIN, GUIDE
1		6	1010622-1	CONNECTOR RECEPTACLE
84		5	1010383-1	INSULATOR, WRAPOST, MALE
84		4	1010382-1	CONTACT, BLADE EDGE CONNECTOR
98		3	1006781-2	CONTACT, WRAPOST, FEMALE, MIN.
98		2	1006774	INSULATOR, WRAPOST, FEMALE, MIN.
1		1	1008110	FRAME

LIST OF PARTS AND MATERIALS

1021230-011	1021207-011	-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS +— DECIMALS ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN C. Lang DATE 5 JUN 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

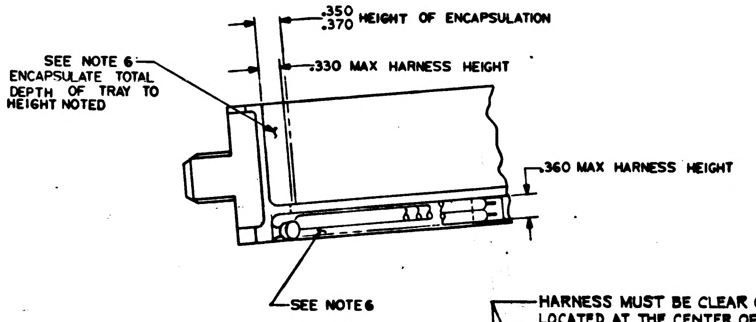
FRAME ASSEMBLY
TRAY 10

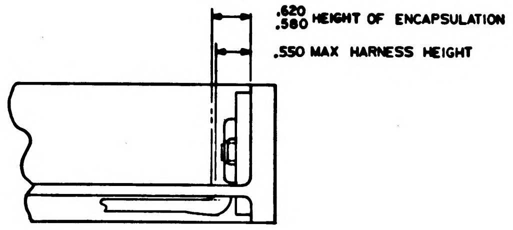
CODE IDENT NO.
SIZE
1021220
SCALE 1:1
SHEET 1 OF 2

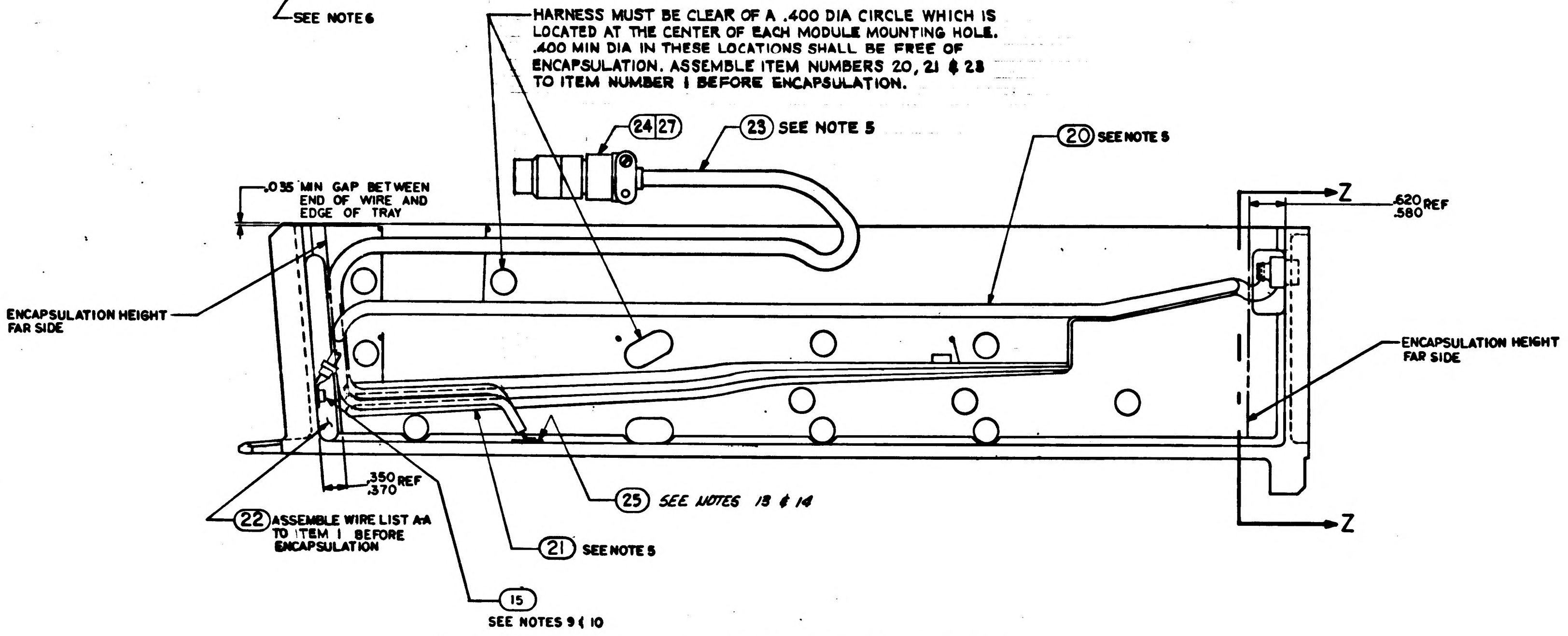
MASTER

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

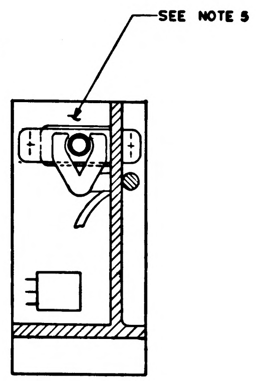
REVISIONS TDRR 10909			
SYM	DESCRIPTION	DATE	APPROVAL


.350
.370 HEIGHT OF ENCAPSULATION
.330 MAX HARNESS HEIGHT
SEE NOTE 6 ENCAPSULATE TOTAL DEPTH OF TRAY TO HEIGHT NOTED
.360 MAX HARNESS HEIGHT
SEE NOTE 6

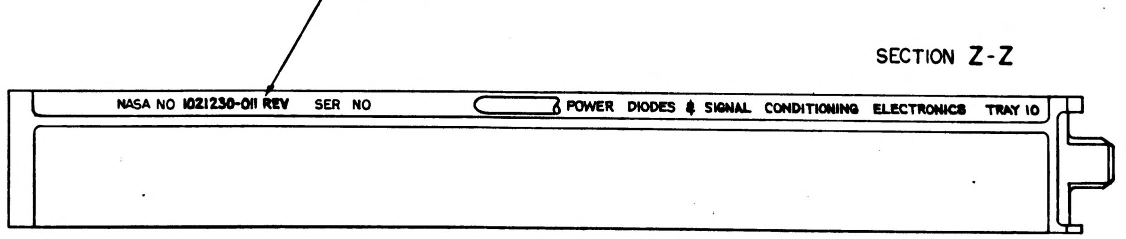

.620
.580 HEIGHT OF ENCAPSULATION
.550 MAX HARNESS HEIGHT


HARNESS MUST BE CLEAR OF A .400 DIA CIRCLE WHICH IS LOCATED AT THE CENTER OF EACH MODULE MOUNTING HOLE. .400 MIN DIA IN THESE LOCATIONS SHALL BE FREE OF ENCAPSULATION. ASSEMBLE ITEM NUMBERS 20, 21 & 28 TO ITEM NUMBER 1 BEFORE ENCAPSULATION.
24 27
23 SEE NOTE 5
20 SEE NOTE 5
.035 MIN GAP BETWEEN END OF WIRE AND EDGE OF TRAY
Z
.620
.580 REF
ENCAPSULATION HEIGHT FAR SIDE
ENCAPSULATION HEIGHT FAR SIDE
.350
.370 REF
Z
25 SEE NOTES 13 & 14
22 ASSEMBLE WIRE LIST A-A TO ITEM 1 BEFORE ENCAPSULATION
21 SEE NOTE 5
15 SEE NOTES 9 & 10

ALL VIEWS SHOWN WITHOUT ENCAPSULATION
SEE NOTE 11



SECTION Z-Z

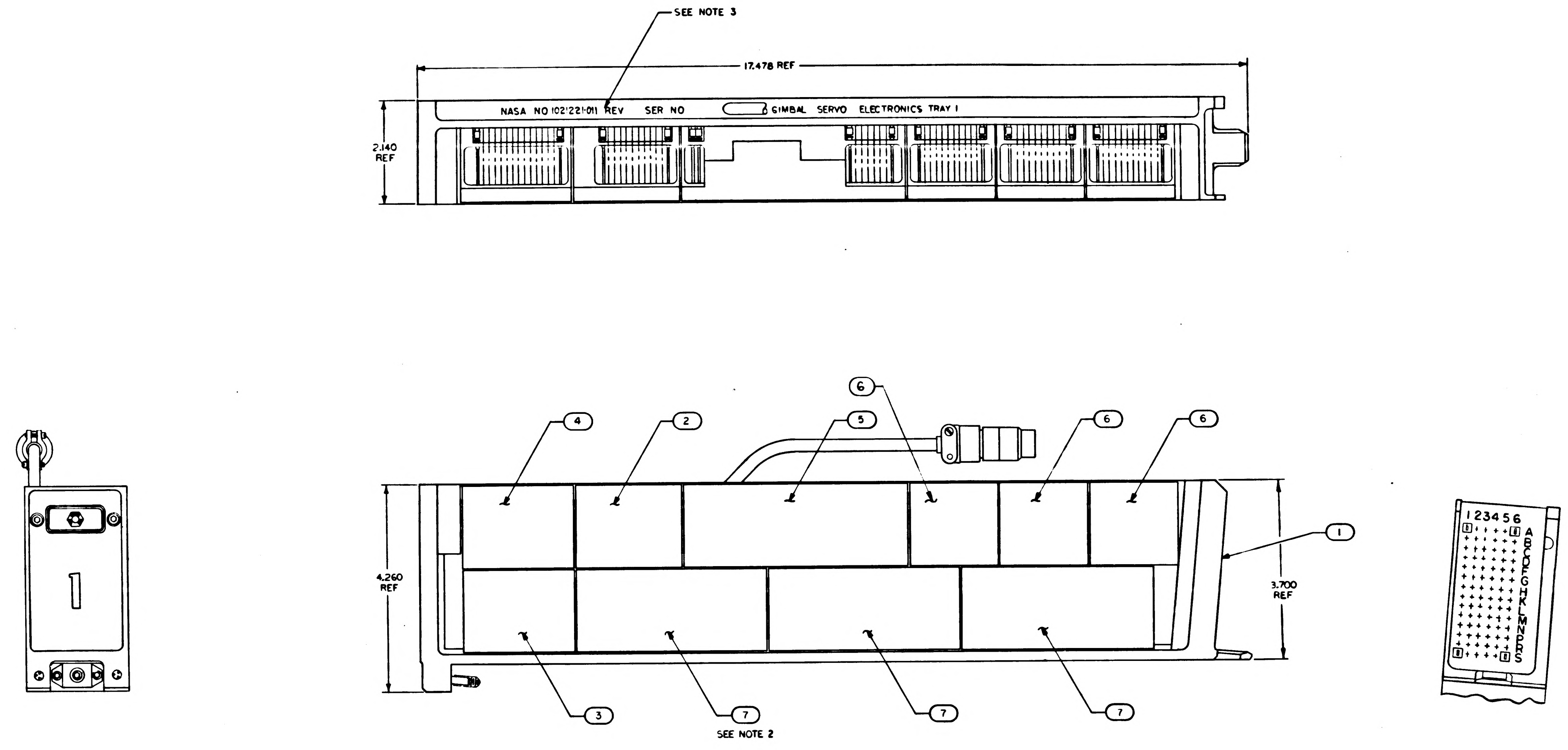

.12 HIGH TYP SEE NOTE 2
NASA NO 1021230-011 REV SER NO
POWER DIODES & SIGNAL CONDITIONING ELECTRONICS TRAY 10

MARKING VIEW AFTER ENCAPSULATION

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS -#- DECIMALS ±.005 ANGLES ± -#- DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWG NO. CONTRACT NAS 9-203 DRAWN C. Koury DATE 5 JUN 64 CHECKED 5 JUN 64 APPROVAL 6/3/64 APPROVAL 6 Jun 64 D. R. Fett 6 Jun 64	MANNED SPACECRAFT CENTER HOUSTON, TEXAS FRAME ASSEMBLY TRAY 10
		MATERIAL -#-		
1021230-011	1021207-011	HEAT TREATMENT -#-	NASA APPROVAL W. S. 7/17/64	CODE IDENT NO. / SIZE E / NASA DRAWING NO 1021220
NEXT ASSY	USED ON	FINAL FINISH -#-	MIT APPROVAL 7/17/64	SCALE 1/1 / WT / SHEET 2 OF 2
APPLICATION				

REVISIONS TD 3R			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 16981	9 MAR 65	M.G.



SEE NOTE 3
17.478 REF
NASA NO 1021221-011 REV SER NO
GIMBAL SERVO ELECTRONICS TRAY I
2.140 REF
4.260 REF
3.700 REF
1
2
3
4
5
6
6
6
7
7
7
SEE NOTE 2
1
1 2 3 4 5 6
A B C D E F G H J K L M N P R S

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S 2,3,4,5,6 AND 7 TO ITEM NO. 1 TO BE 13/17 IN LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3		7	1007540-011	GIMBAL SERVO AMPL
3		6	1007541-011	GIMBAL COARSE ALIGN AMP
1		5	1007542-011	POWER SUPPLY - 28 VDC
1		4	1007543-011	AAC FILTER & MVB (3200 CPS)
1		3	1007402-011	AMPL 1% 3200 CPS
1		2	1007545-011	TEMP CONT PWR SUP 3200 CPS 201
1		1	1021211-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomasi DATE 25 MAY 64
CHECKED 9 JUN 64
APPROVAL R. Cahey 6/8/64
APPROVAL 8 Jun 64
NASA APPROVAL
MIT APPROVAL 14 Jul 64

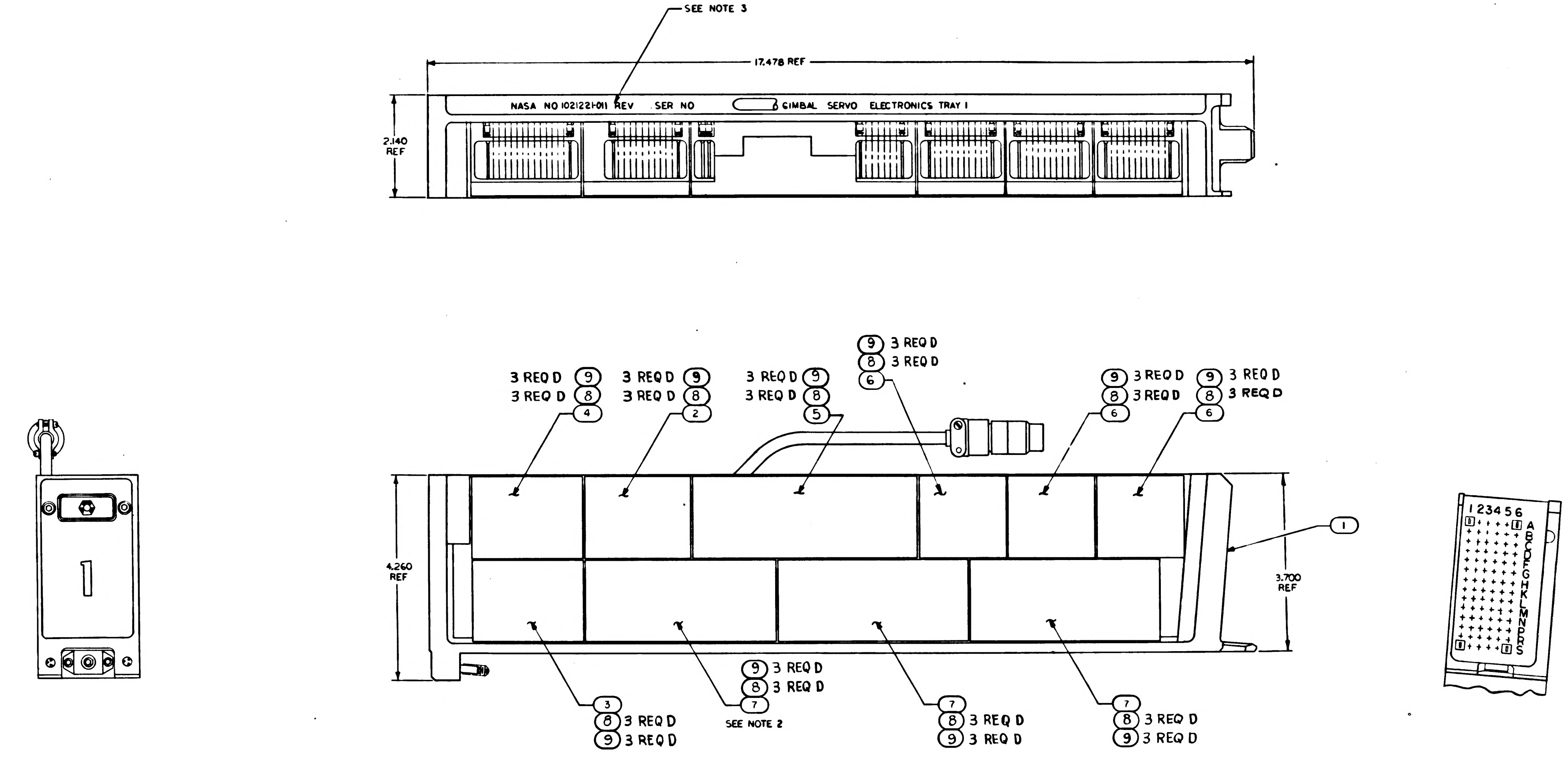
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO
ELECTRONICS ASSEMBLY,
TRAY 1

CODE IDENT NO
SIZE E
1021221
SCALE 1:1
SHEET OF

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 16981	9 MAR 65	M. G.
B	REVISED PER TDRR 20786	20 JUL 65	RWH

REVISIONS TD 3R 10907



SEE NOTE 3
17.478 REF
2.140 REF
NASA NO 1021221-011 REV SER NO
GIMBAL SERVO ELECTRONICS TRAY 1
3 REQ D ⑨
3 REQ D ⑧
④
3 REQ D ⑨
3 REQ D ⑧
②
3 REQ D ⑨
3 REQ D ⑧
⑤
⑨ 3 REQ D
⑧ 3 REQ D
⑥
⑨ 3 REQ D
⑧ 3 REQ D
⑥
⑨ 3 REQ D
⑧ 3 REQ D
⑥
①
4.260 REF
3.700 REF
③
⑧ 3 REQ D
⑨ 3 REQ D
⑨ 3 REQ D
⑧ 3 REQ D
⑦
SEE NOTE 2
⑦
⑧ 3 REQ D
⑨ 3 REQ D
⑦
⑧ 3 REQ D
⑨ 3 REQ D
1
1 2 3 4 5 6
A B C D E F G H J K L M N P R S

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S 2,3,4,5,6 AND 7 TO ITEM NO. 1 TO BE 25/30 IN LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

					ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			30		9	MS 15795-805	WASHER, FLAT
			30		8	NAS 1352-06-8	SCREW, CAP SOCKET HEAD
			3		7	1007540-011	GIMBAL SERVO AMPL
			3		6	1007541-011	GIMBAL COARSE ALIGN AM
			1		5	1007542-011	POWER SUPPLY - 28 VDC
			1		4	1007543-011	AAC FILTER & MVB (3200 CPS)
			1		3	1007402-011	AMPL 1% 3200 CPS
			1		2	1007545-011	TEMP CONT PWR SUP 3200 CPS 20
			1		1	1021211-011	FRAME ASSEMBLY
			011	EFFECTIVITY			
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ — + — + —
- — - — - —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Tomas DATE 25 MAY 64
CHECKED 2 JUN 64
APPROVAL R. 6/8/64
APPROVAL 8 Jun 64
NASA APPROVAL
MIT APPROVAL 14 Jul 64

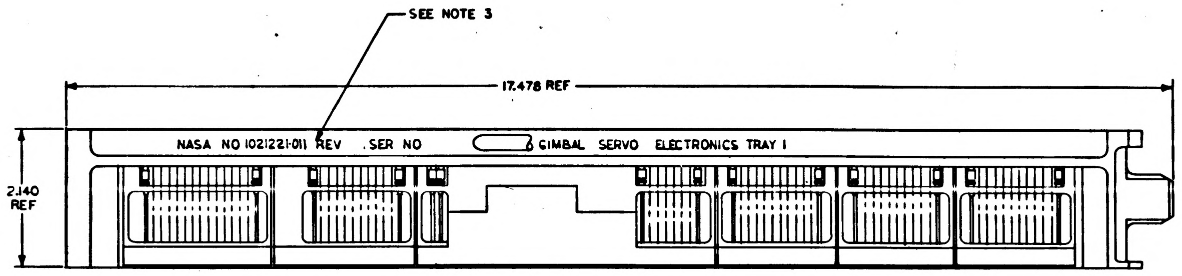
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

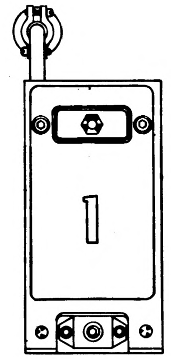
GIMBAL SERVO
ELECTRONICS ASSEMBLY,
TRAY 1

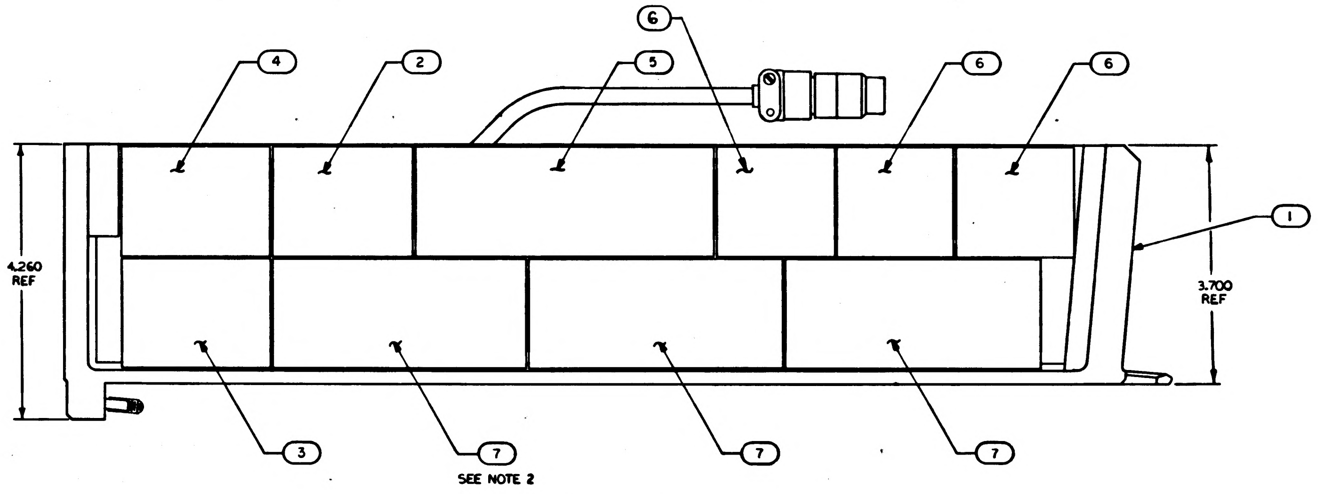
CODE IDENT NO 80230
SIZE E
1021221
SCALE 1:1
SHEET 1 OF 1

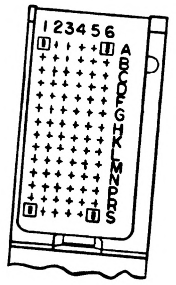
REVISIONS TDBR 10907

SYM	DESCRIPTION	DATE	APPROVAL


SEE NOTE 3
17.478 REF
NASA NO 1021221-011 REV .SER NO
GIMBAL SERVO ELECTRONICS TRAY 1
2.140 REF




6
4
2
5
6
6
1
4.260 REF
3.700 REF
3
7
SEE NOTE 2
7
7


1 2 3 4 5 6
A B C D E F G H J K L M N P R S

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S 2,3,4,5,6 AND 7 TO ITEM NO. 1 TO BE 13/17 IN LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3		7	1007040	GIMBAL SERVO AMPL
3		6	1007041	GIMBAL COARSE ALIGN AMPL
1		5	1007042	POWER SUPPLY - 28 VDC
1		4	1007043	AAC FILTER & MVB (3200 CPS)
1		3	1007044	AMPL 1% 3200 CPS
1		2	1007045	TEMP CONT PWR SUP 3200CPS 201
1		1	1021211-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

MASTER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± — ± — ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Toman DATE 28 MAY 64
CHECKED 4 JUN 64
APPROVAL R. Oakey 6/8/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO
ELECTRONICS ASSEMBLY,
TRAY 1

CODE IDENT NO
SIZE E
1021221
SCALE 1:1
SHEET OF 1

1021221

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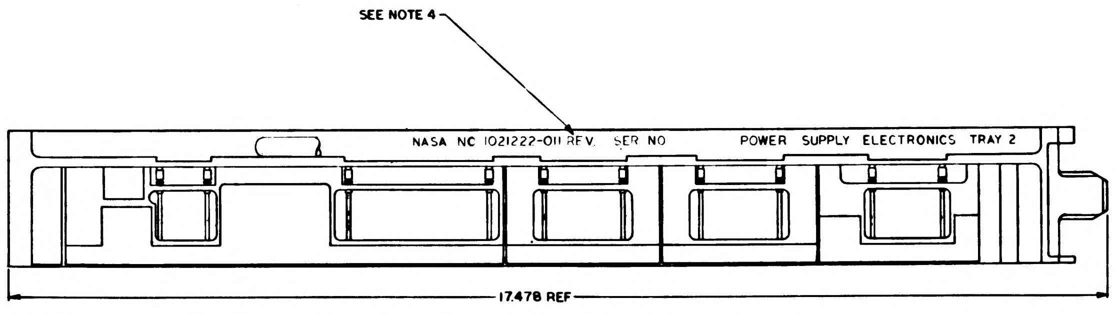
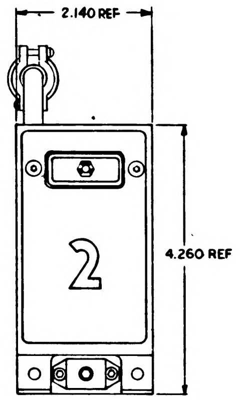
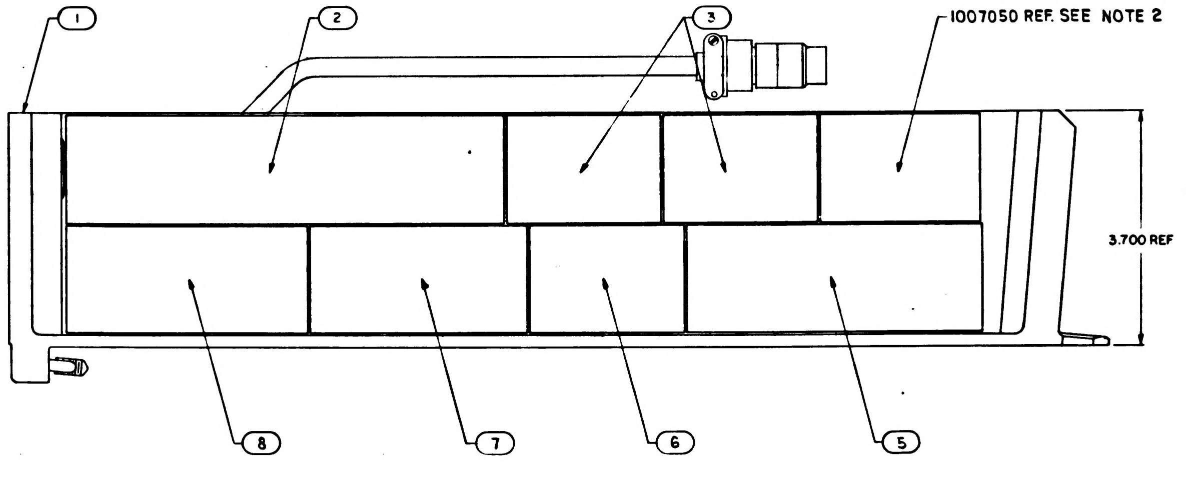
REVISIONS TDRR 1-930

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 1698	9-22-65	

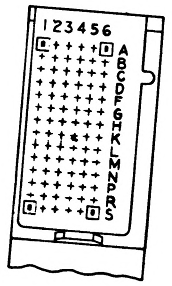


SEE NOTE 4
NASA NC 1021222-011 REV. SER NO POWER SUPPLY ELECTRONICS TRAY 2
17.478 REF





SEE NOTE 3



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. REFERENCED MODULE TO BE ASSEMBLED TO ITEM NO. 1 AS SHOWN. MODULE IS DEFINED AS PART OF INERTIAL MEASURING UNIT ALONG WITH THE ASSOCIATED SERIALIZED INERTIAL COMPONENTS. REF. DWG. 1000201.
3. MOUNTING TORQUE TO SECURE ITEM NO'S 2,3,5,6,7, AND 8 TO ITEM NO. 1 TO BE 13/17 IN LB. SAME TORQUE APPLIES TO REFERENCED MODULE.
4. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023
5. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

			1		8	1007266-011	FAILURE INDICATOR
			1		7	1007437-011	AMPLIFIER 1% 800 CPS
			1		6	1007546-011	ACC 800 CPS FILTER & MULTIVIBRATOR
			1		5	1007438-011	AMPLIFIER 5% 800 CPS
			2		3	1007549-011	POWER SUPPLY 25.6 KC, ENCODER
			1		2	1007412-011	PULSE TORQUING POWER SUPPLY
			1		1	1021212-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± — ± — ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. LaDue DATE 23 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 9 JUN 64
NASA APPROVAL
MIT APPROVAL W. Kupfer 10 July 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

POWER SUPPLY
ELECTRONICS ASSEMBLY
TRAY 2

CODE IDENT NO
SIZE E
1021222
SCALE 1:1
SHEET 1 OF 1

1021222 A

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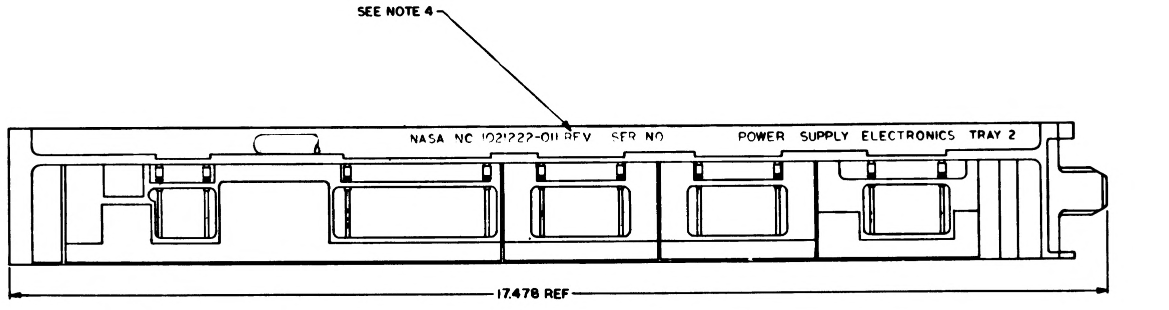
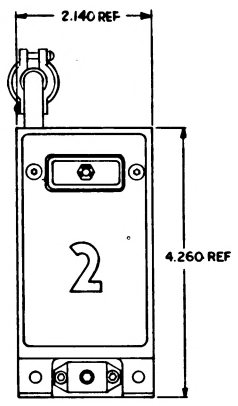
REVISIONS TDRR 1-907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 16981	9- [illegible]	[illegible]
B	REVISED PER TDRR 20786	20 JUL 65	MCK RWH


SEE NOTE 4
NASA NO 1021222-011 REV SER NO POWER SUPPLY ELECTRONICS TRAY 2
17.478 REF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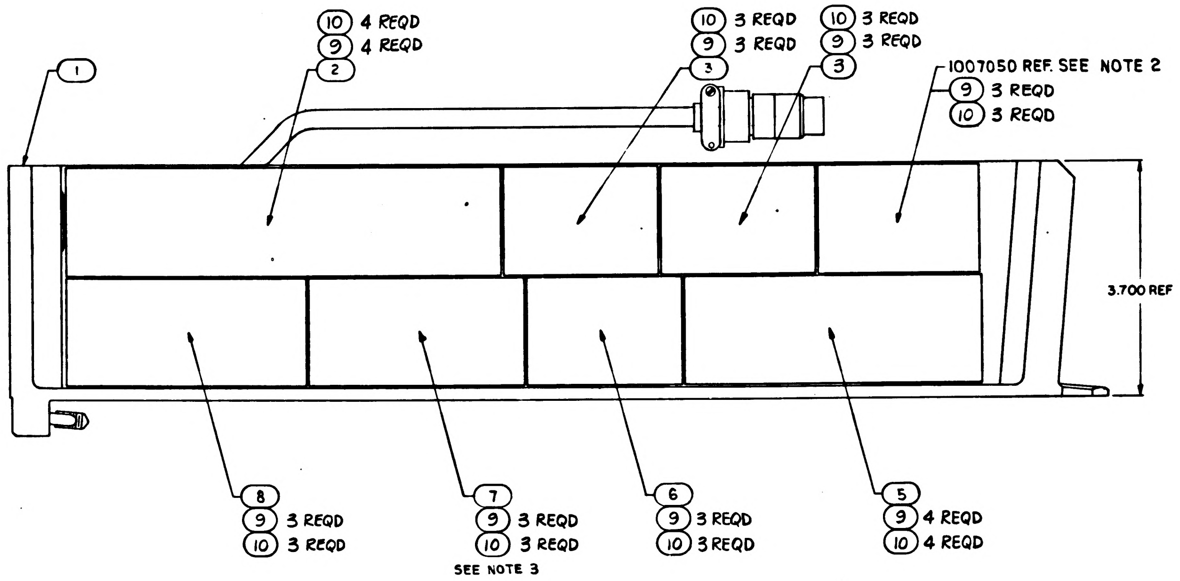
2
4.260 REF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⑨ 4 REQD
②
⑩ 3 REQD
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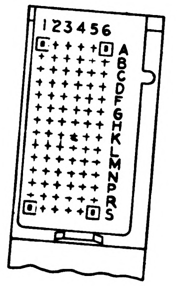
③
⑩ 3 REQD
⑨ 3 REQD
③
1007050 REF. SEE NOTE 2
⑨ 3 REQD
⑩ 3 REQD
3.700 REF
⑧
⑨ 3 REQD
⑩ 3 REQD
⑦
⑨ 3 REQD
⑩ 3 REQD
SEE NOTE 3
⑥
⑨ 3 REQD
⑩ 3 REQD
⑤
⑨ 4 REQD
⑩ 4 REQD


1 2 3 4 5 6
A B C D E F G H K L M N P R S

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. REFERENCED MODULE TO BE ASSEMBLED TO ITEM NO. 1 AS SHOWN. MODULE IS DEFINED AS PART OF INERTIAL MEASURING UNIT ALONG WITH THE ASSOCIATED SERIALIZED INERTIAL COMPONENTS. REF. DWG. 1000201.
3. MOUNTING TORQUE TO SECURE ITEM NO'S 2,3,5,6,7, AND 8 TO ITEM NO. 1 TO BE 25/30 IN. LBS SAME TORQUE APPLIES TO REFERENCED MODULE.
4. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023
5. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

1021222 B

			26		10	MS15795-805	WASHER, FLAT
			26		9	NAS1352-06-8	SCREW, CAP SOCKET HEAD
			1		8	1007266-011	FAILURE INDICATOR
			1		7	1007437-011	AMPLIFIER 1% 800 CPS
			1		6	1007546-011	ACC 800 CPS FILTER & MULTIVIBRATOR
			1		5	1007438-011	AMPLIFIER 5% 800 CPS
			2		3	1007549-011	POWER SUPPLY 25.6 KC, ENCODER
			1		2	1007412-011	PULSE TORQUING POWER SUPPLY
			1		1	1021212-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021207-011		-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

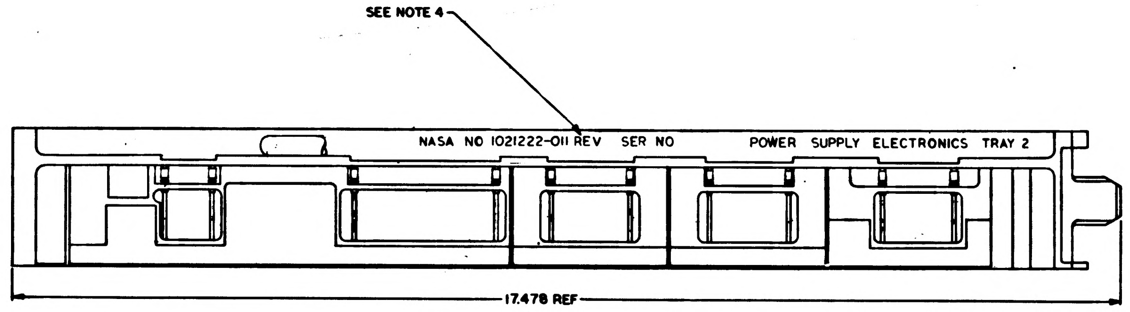
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. LeBlanc DATE 23 MAY 64
CHECKED [illegible] 5 JUN 64
APPROVAL [illegible] 8 JUN 64
APPROVAL [illegible] 8 JUN 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 14 [illegible] 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

POWER SUPPLY
ELECTRONICS ASSEMBLY
TRAY 2

CODE IDENT NO 80230
SIZE E
1021222
SCALE 1:1
SHEET 1 OF 1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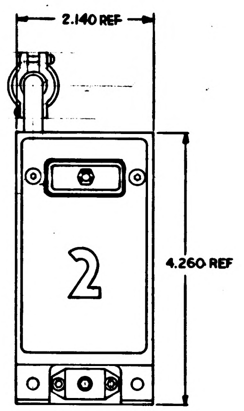
NASA NO 1021222-011 REV SER NO POWER SUPPLY ELECTRONICS TRAY 2
17.478 REF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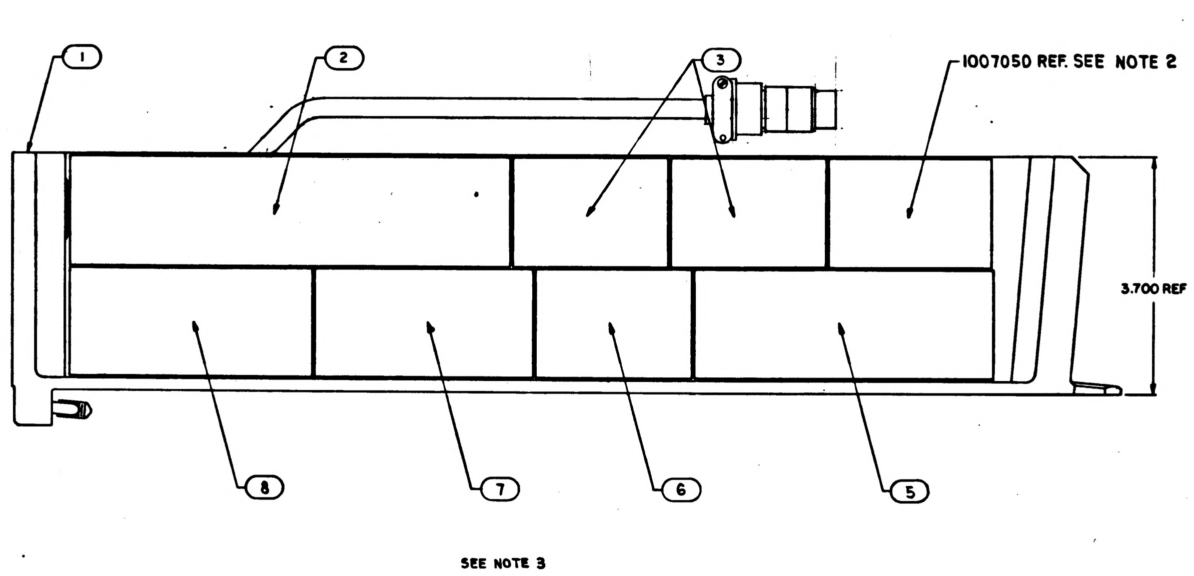
2
4.260 REF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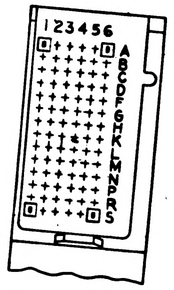
2
3
1007050 REF. SEE NOTE 2
3.700 REF
8
7
6
5
SEE NOTE 3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NOTES:

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4. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023

			1		8	1007051	FAILURE INDICATOR
			1		7	1007047	AMPLIFIER 1% 800 CPS
			1		6	1007046	ACC 800 CPS FILTER & MULTIVIBRATOR
			1		5	1007048	AMPLIFIER 5% 800 CPS
			2		3	1007049	POWER SUPPLY 25.6 KC, ENCODER
			1		2	1007052	PULSE TORQUING POWER SUPPLY
			1		1	1021212-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. LeDuc DATE 29 MAY 64
CHECKED 5 JUN 64
APPROVAL 6 JUN 64
APPROVAL 6 JUN 64
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

POWER SUPPLY
ELECTRONICS ASSEMBLY
TRAY 2

CODE IDENT NO.
SIZE E
1021222
SCALE 1:1
SHEET 1 OF 1

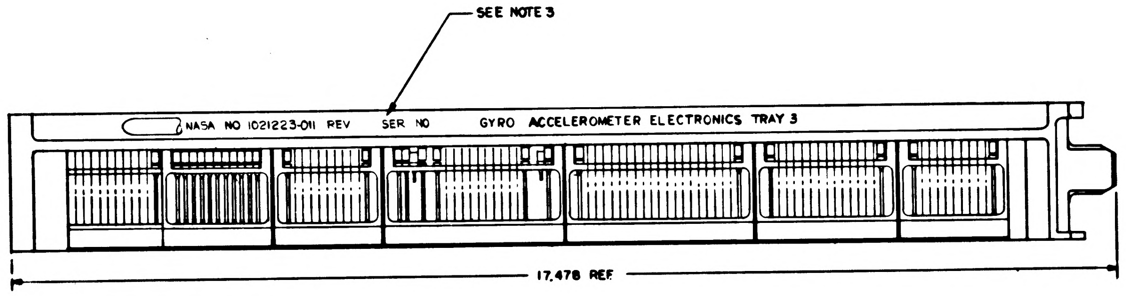
1021222

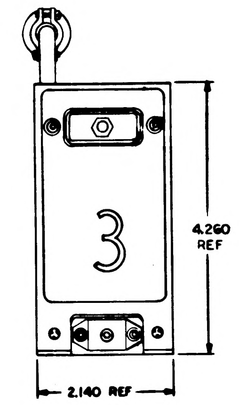
MASTER

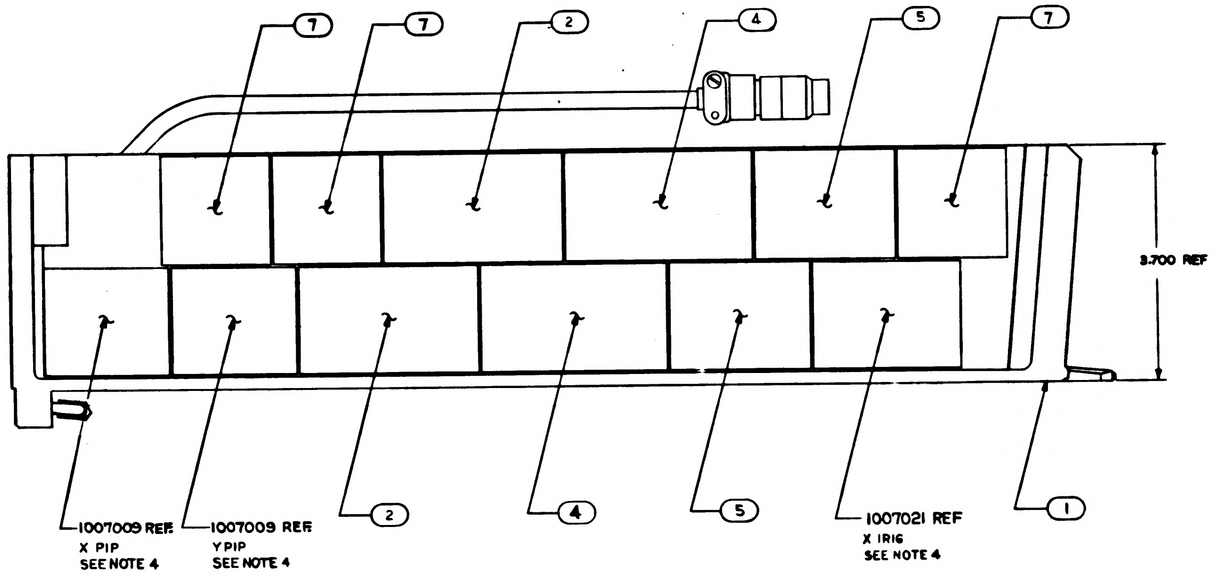
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

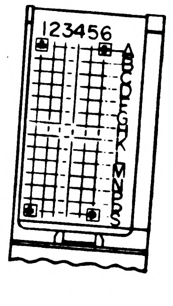
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER DRR 3033	NOV 64	[illegible]

REVISIONS DRR 10907


SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3
17.478 REF







NOTES
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QUANTITY REQUIRED			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			3		7	1007007	DC DIFF AMPLIFIER & POWER
			~~2~~		6	~~1007009~~	~~PIPA CALIBRATION~~
			2		5	1007017	AC DIFFERENTIAL AMPLIFIER
			2		4	1007019	INTERROGATOR
			~~1~~		3	~~1007021~~	~~PULSE TORQUE GYRO CALIBRATE~~
			2		2	1007027	BINARY CURRENT SWITCH
			1		1	1021213-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —— DECIMALS ± —— ANGLES ± ——
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomson DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 JUL 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 3

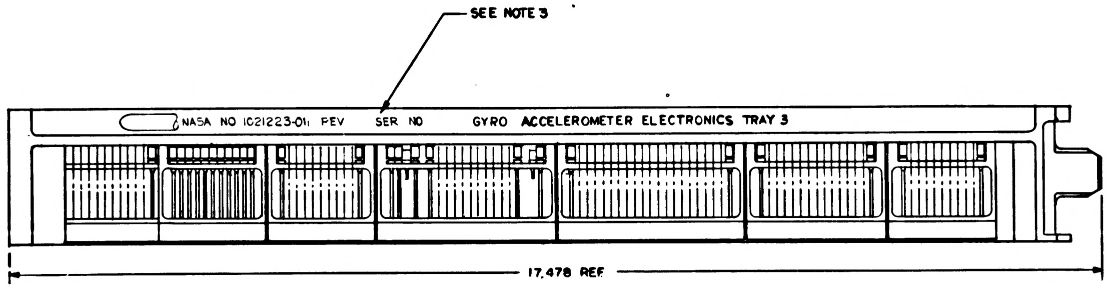
CODE IDENT NO
SIZE E
1021223
SCALE 1:1
SHEET 1 OF 1

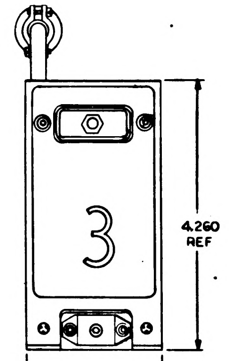
1021223 A

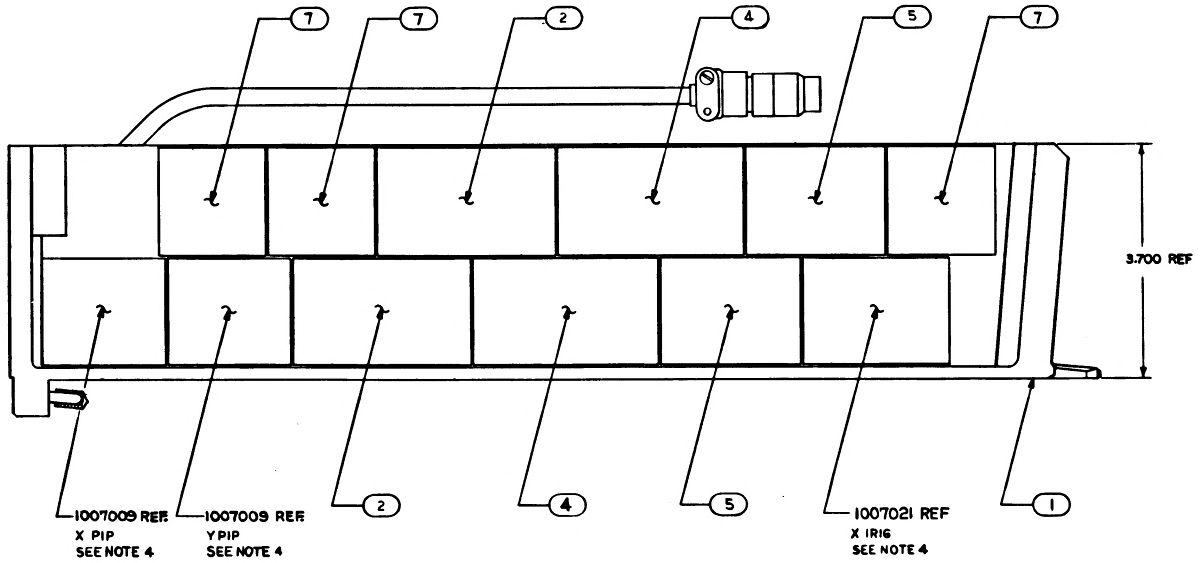
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

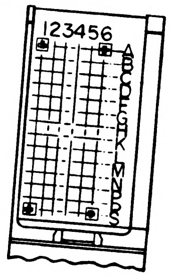
REVISIONS ZRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13033	NOV 64	
B	REVISED PER TDRR 16081	9 MAR 66	


SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3
17.478 REF







NOTES
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4. REFERENCED MODULES TO BE ASSEMBLED TO FIND NO. 1 AS SHOWN. MODULES ARE DEFINED AS PART OF INERTIAL MEASURING UNIT ALONG WITH THE ASSOCIATED SERIALIZED INERTIAL COMPONENTS. REF. DWG. 1001598 AND 1001599.
5. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

1021223 B

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3		7	1007507-011	DC DIFF AMPLIFIER & POWER
~~2~~		6	~~1007009~~	~~PIPA CALIBRATION~~
2		5	1007517-011	AC DIFFERENTIAL AMPLIFIER
2		4	1007419-011	INTERROGATOR
~~1~~		3	~~1007021~~	~~PULSE TORQUE GYRO CALIBR~~
2		2	1007427-011	BINARY CURRENT SWITCH
1		1	1021213-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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TOLERANCES ON
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DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tamson DATE 29 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 Jul 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

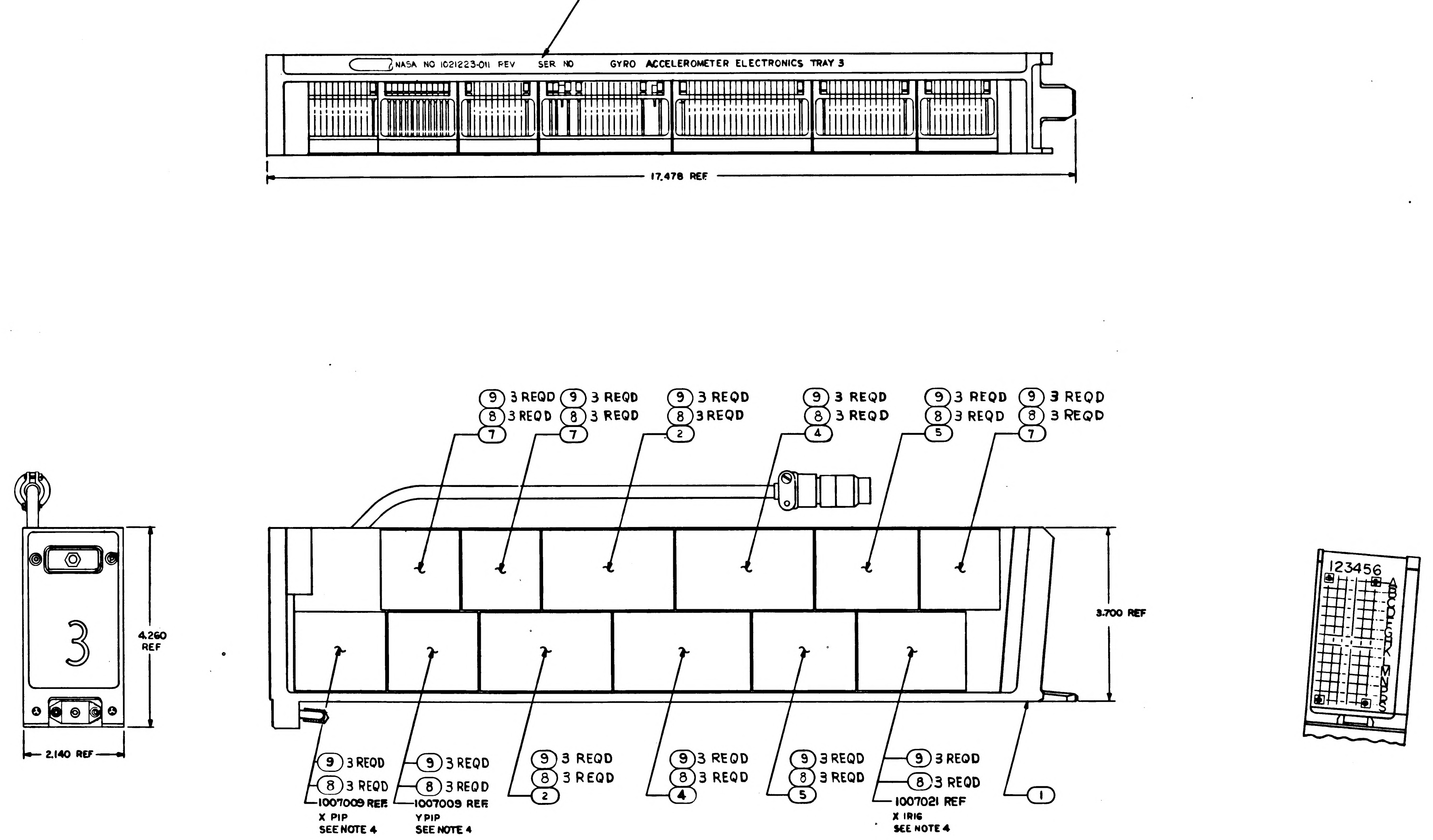
GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 3

CODE IDENT NO
SIZE E
1021223
SCALE 1:1
SHEET 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS DRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13033	NOV 64	
B	REVISED PER TDRR 16491	MAR 66	
C	REVISED PER TDRR 20786	20 JUL 66	R.H. RWH



NOTES
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			36		9	MS15795-805	WASHER, FLAT
			36		8	NAS1352-06-8	SCREW, CAP SOCKET HEAD
			3		7	1007507-011	DC DIFF AMPLIFIER & POWE
			~~2~~		6	~~1007009~~	~~PIPA CALIBRATION~~
			2		5	1007517-011	AC DIFFERENTIAL AMPLIFIE
			2		4	1007419-011	INTERROGATOR
			~~1~~		3	~~1007021~~	~~PULSE TORQUE GYRO CALIB~~
			2		2	1007427-011	BINARY CURRENT SWITCH
			1		1	1021213-011	FRAME ASSEMBLY
QUANTITY REQUIRED			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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MATERIAL
CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Tamm DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 JUN 64
NASA APPROVAL 7/14/64
MIT APPROVAL 14 Jul 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 3

CODE IDENT NO 80230
SIZE E
1021223
SCALE 1:1
SHEET 1 OF 1

1021223 C

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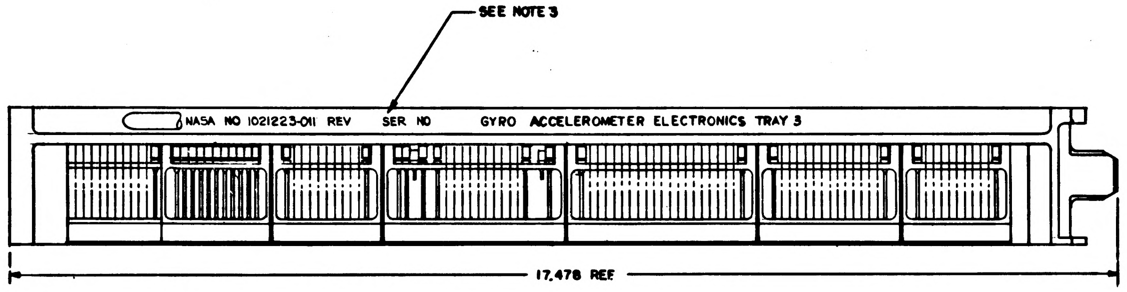
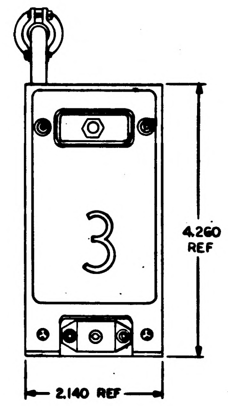
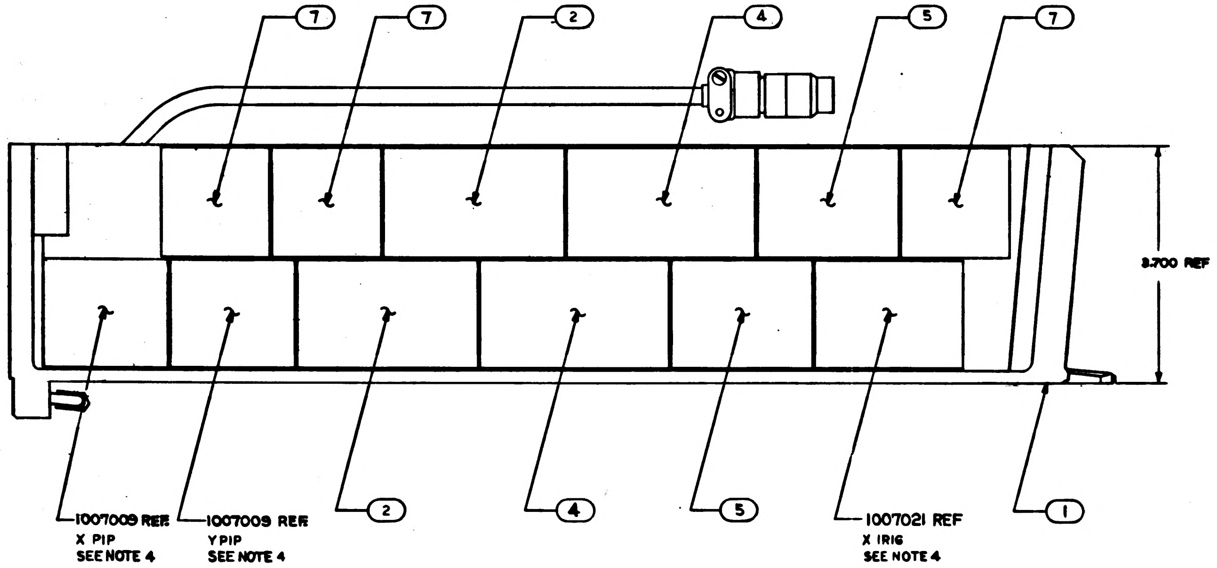
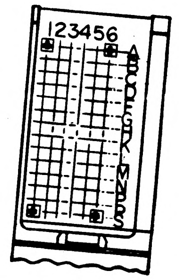
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL


SEE NOTE 3
NASA NO 1021223-011 REV SER NO GYRO ACCELEROMETER ELECTRONICS TRAY 3
17.478 REF







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			3		7	1007007	DC DIFF AMPLIFIER & POWER
			2		6	1007009	PIPA CALIBRATION
			2		5	1007017	AC DIFFERENTIAL AMPLIFIER
			2		4	1007019	INTERROGATOR
			1		3	1007021	PULSE TORQUE GYRO CALIBRATE
			2		2	1007027	BINARY CURRENT SWITCH
			1		1	1021213-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021207-011		-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± — ± — ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomsen DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 8 JUN 64
APPROVAL 8 Jun 64
NASA APPROVAL
MIT APPROVAL 14

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 3

CODE IDENT NO.
SIZE E
1021223
SCALE 1:1
SHEET 1 3

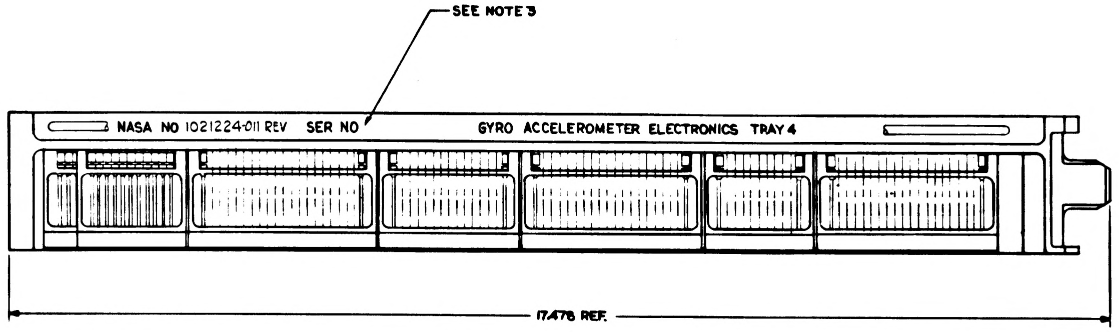
MASTER

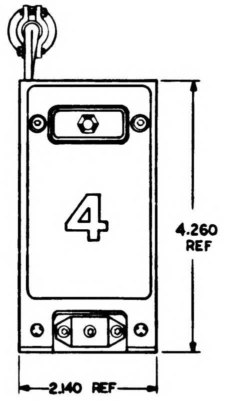
1021223

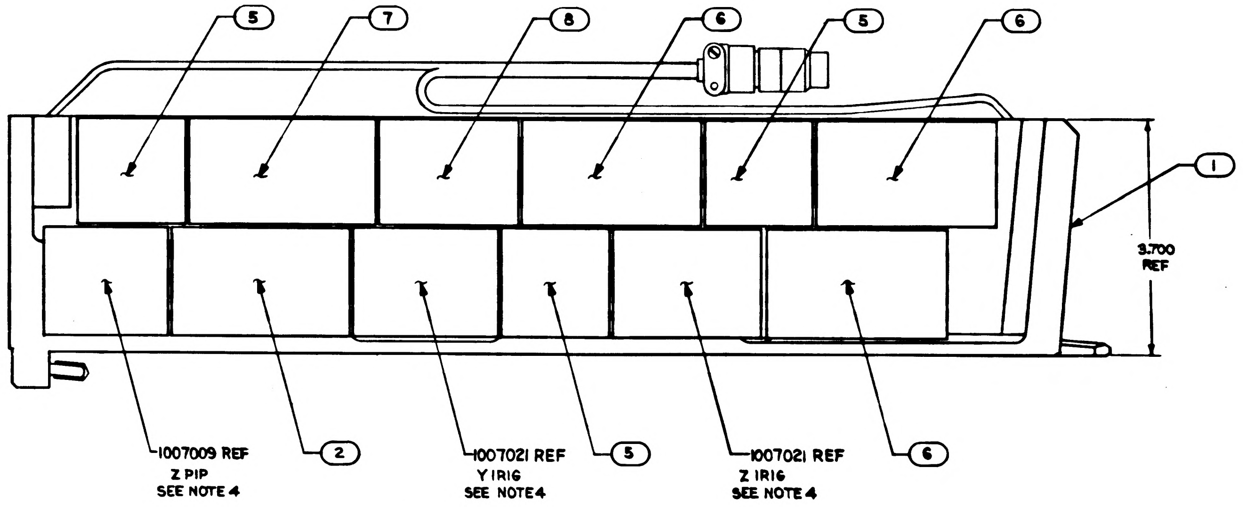
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10907

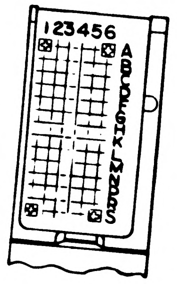
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13933	NOV 64	[illegible]


SEE NOTE 3
NASA NO 1021224-011 REV SER NO
GYRO ACCELEROMETER ELECTRONICS TRAY 4
17.478 REF.





SEE NOTE 2



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE 2,5,6,7, AND 8 TO ITEM NO. 1 TO BE 13/17 IN. LB. SAME TORQUE APPLIES TO REFERENCED MODULES.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023.
4. REFERENCED MODULES TO BE ASSEMBLED TO ITEM NO. 1 AS SHOWN. MODULES ARE DEFINED AS PART OF INERTIAL MEASURING UNIT ALONG WITH THE ASSOCIATED SERIALIZED INERTIAL COMPONENTS. REF DWG. 1001598 AND 1001599

QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1		8	1007017	AC DIFF AMPL
1		7	1007019	INTERROGATOR
3		6	1007016	TERNARY CURRENT SWITCH
3		5	1007007	DC DIFF AMPL & PVR
~~1~~		4	~~1007009~~	~~PIPA CALIBRATION~~
~~2~~		3	~~1007021~~	~~PULSE TORQUE GYRO CALIBRATE~~
1		2	1007027	BINARY CURRENT SWITCH
1		1	1021214-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tempel DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 4

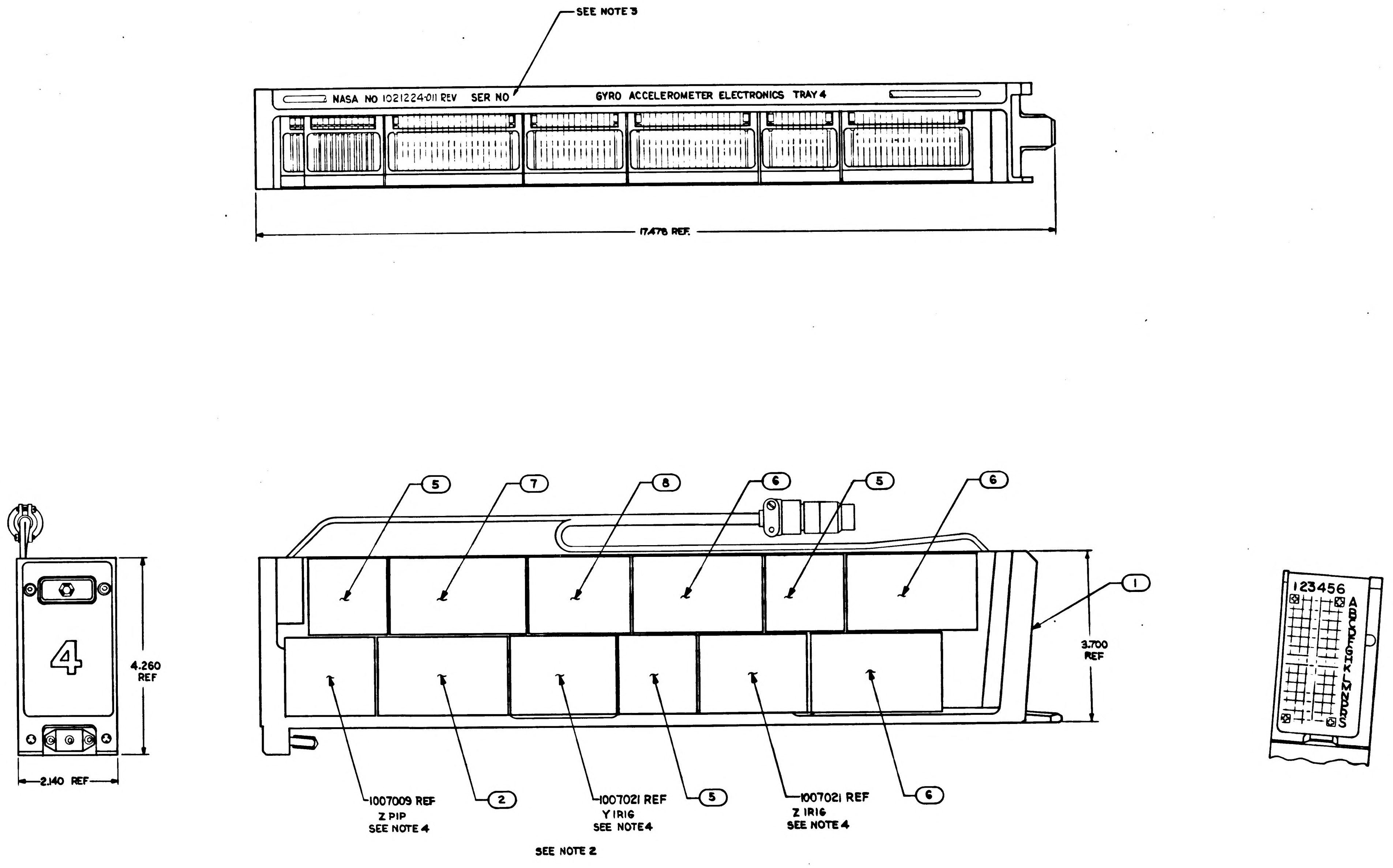
CODE IDENT NO.
SIZE E
1021224
SCALE 1:1
SHEET 1 OF 1

1021224 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 10927

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13933	[illegible] 64	[illegible]
B	REVISED PER TDRR 16981	9-MAR 65	[illegible]



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE 2,5,6,7, AND 8 TO ITEM NO. 1 TO BE 15/17 IN. LB. SAME TORQUE APPLIES TO REFERENCED MODULES.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023.
4. REFERENCED MODULES TO BE ASSEMBLED TO ITEM NO. 1 AS SHOWN. MODULES ARE DEFINED AS PART OF INERTIAL MEASURING UNIT ALONG WITH THE ASSOCIATED SERIALIZED INERTIAL COMPONENTS. REF. DWG. 1001598 AND 1001599
5. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		8	1007517-011	AC DIFF AMPL
			1		7	1007419-011	INTERROGATOR
			3		6	1007416-011	TERNARY CURRENT SWITCH
			3		5	1007507-011	DC DIFF AMPL & PVR
			~~1~~		4	~~1007009~~	~~PIPA CALIBRATION~~
			~~2~~		3	~~1007021~~	~~PULSE TORQUE GYRO CALIBRATE~~
			1		2	1007427-011	BINARY CURRENT SWITCH
			1		1	1021214-011	FRAME ASSEMBLY
			011				

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomasul DATE 26 MAY 64
CHECKED [illegible] 5 JUN 64
APPROVAL [illegible] 6/5/64
APPROVAL [illegible] 8 JUN 64
NASA APPROVAL [illegible]
MIT APPROVAL W. Kaffer 14 [illegible] 64

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SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 4

CODE IDENT NO.
SIZE E
1021224
SCALE 1:1
SHEET 1 OF 1

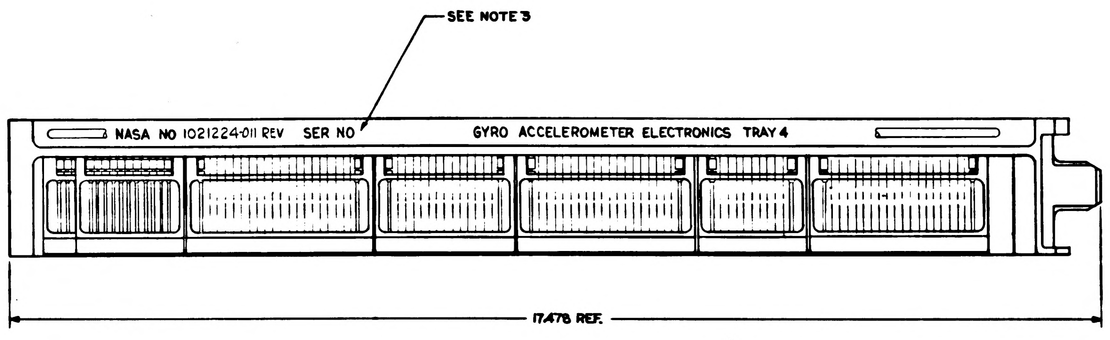
1021224 (B)

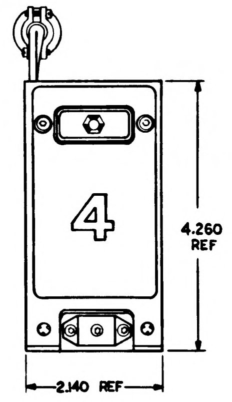
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

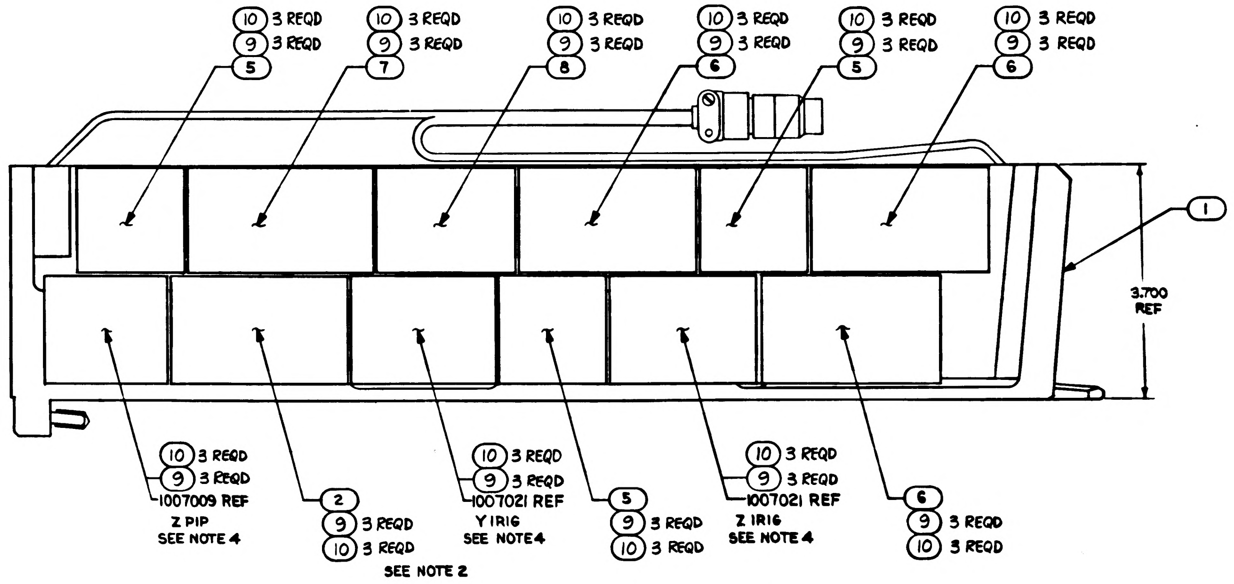
REVISIONS TDRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13933	-64	
B	REVISED PER TDRR 16981	9-MAR-65	
C	REVISED PER TDRR 20786	20 JUL 65	RWH

(M)


SEE NOTE 3
NASA NO 1021224-011 REV SER NO
GYRO ACCELEROMETER ELECTRONICS TRAY 4
17.478 REF.


4
4.260 REF
2.140 REF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3.700 REF
10 3 REQD
9 3 REQD
1007009 REF
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9 3 REQD
10 3 REQD
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1007021 REF
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SEE NOTE 4
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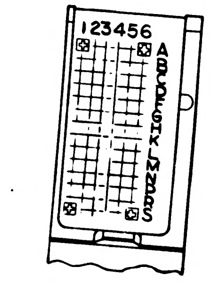
9 3 REQD
10 3 REQD



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE 2,5,6,7, AND 8 TO ITEM NO. 1 TO BE 25/30 IN. LBS. SAME TORQUE APPLIES TO REFERENCED MODULES.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023.
4. REFERENCED MODULES TO BE ASSEMBLED TO ITEM NO. 1 AS SHOWN. MODULES ARE DEFINED AS PART OF INERTIAL MEASURING UNIT ALONG WITH THE ASSOCIATED SERIALIZED INERTIAL COMPONENTS. REF. DWG. 1001598 AND 1001599
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			36		10	MS15795-805	WASHER, FLAT
			36		9	NAS1352-06-8	SCREW, CAP SOCKET HEAD
			1		8	1007517-011	AC DIFF AMPL
			1		7	1007419-011	INTERROGATOR
			3		6	1007416-011	TERNARY CURRENT SWITCH
			3		5	1007507-011	DC DIFF AMPL & PVR
			~~1~~		4	~~1007009~~	~~PIPA CALIBRATION~~
			~~2~~		3	~~1007021~~	~~PULSE TORQUE GYRO CALIB~~
			1		2	1007427-011	BINARY CURRENT SWITCH
			1		1	1021214-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − — DECIMALS + — − — ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN C. Tancred DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL 14/6/64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 4

CODE IDENT NO. 80230
SIZE E
1021224
SCALE 1:1
SHEET 1 OF 1

1021224

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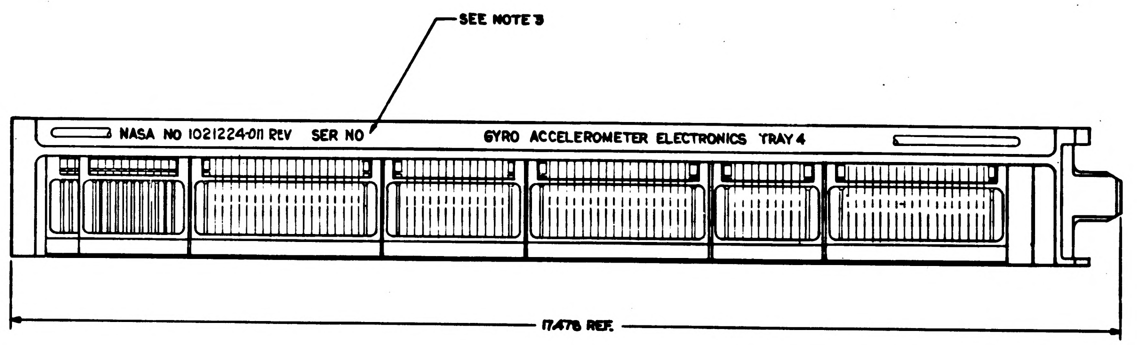
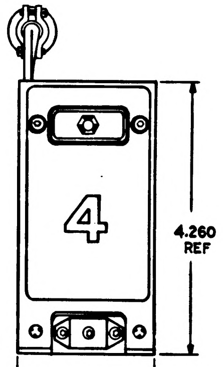
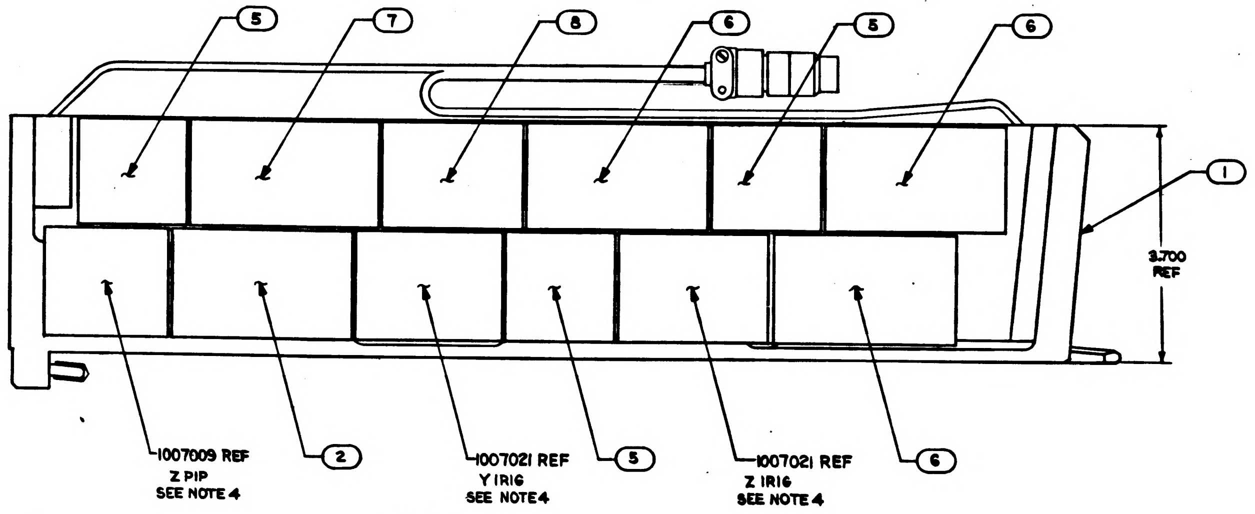
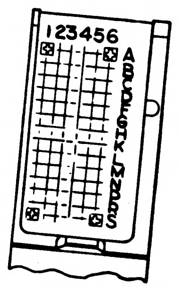
SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 10907		


SEE NOTE 3
NASA NO 1021224-011 REV SER NO
GYRO ACCELEROMETER ELECTRONICS TRAY 4
17.478 REF.





SEE NOTE 2



NOTES

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2. MOUNTING TORQUE TO SECURE 2,5,6,7, AND 8 TO ITEM NO. 1 TO BE 15/17 IN. LB. SAME TORQUE APPLIES TO REFERENCED MODULES.
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			1		8	1007017	AC DIFF AMPL
			1		7	1007019	INTERROGATOR
			3		6	1007016	TERNARY CURRENT SWITCH
			3		5	1007007	DC DIFF AMPL & PVR
			1		4	1007009	PIPA CALIBRATION
			2		3	1007021	PULSE TORQUE GYRO CALIBRATE
			1		2	1007027	BINARY CURRENT SWITCH
			1		1	1021214-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GYRO-ACCELEROMETER ELECTRONICS ASSEMBLY TRAY 4

CODE IDENT NO.
SIZE E
1021224
SCALE 1:1
SHEET 1 OF 1

1021224

MASTER

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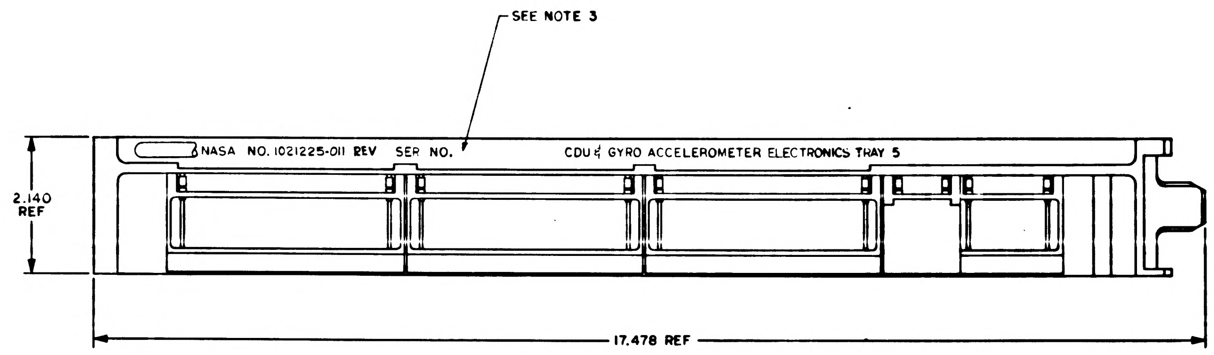
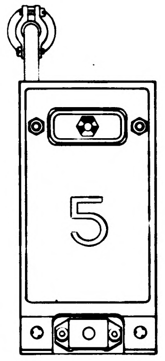
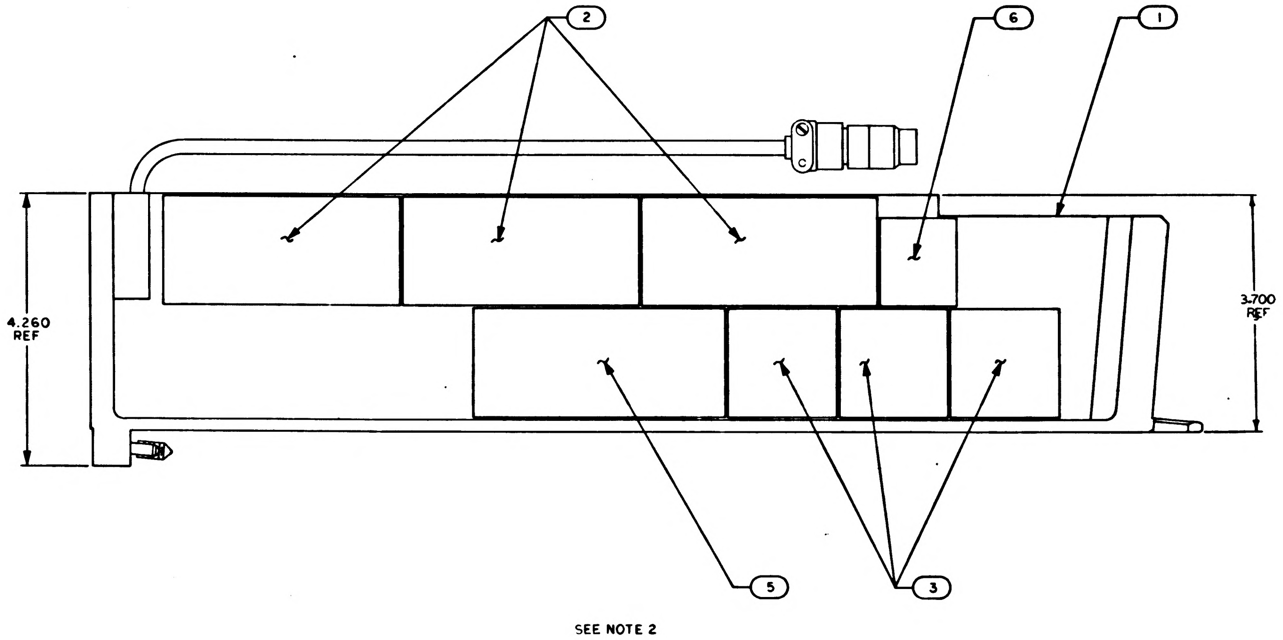
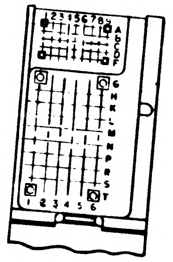
REVISIONS CIRR 10707

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13917	10-NOV-64	


SEE NOTE 3
NASA NO. 1021225-011 REV SER NO.
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5
2.140 REF
17.478 REF







NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S. 2,3, 5,6 AND 7 TO ITEM NO. 1 TO BE 13/17 IN.LB.
3. SERIALIZE AND MAKE (WHITE) .14/.10 HIGH PER ND1002023

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		6	1007061	CDU ZEROING & LOCK RELAYS
			1		5	1007058	FWD-BACKWARD CTR & CMPTR OUTPUT
			~~1~~		4	~~1007057~~	~~BACK-UP MODE ELECTRONICS~~
			3		3	1007055	CDU D TO A CONVERTER
			3		2	1007054	ENCODER
			1		1	1021215-011	FRAME ASSEMBLY

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO
1021207-011		-011

APPLICATION

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DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN R. Tamm DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 30 Jun 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

CDU AND GYRO ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 5

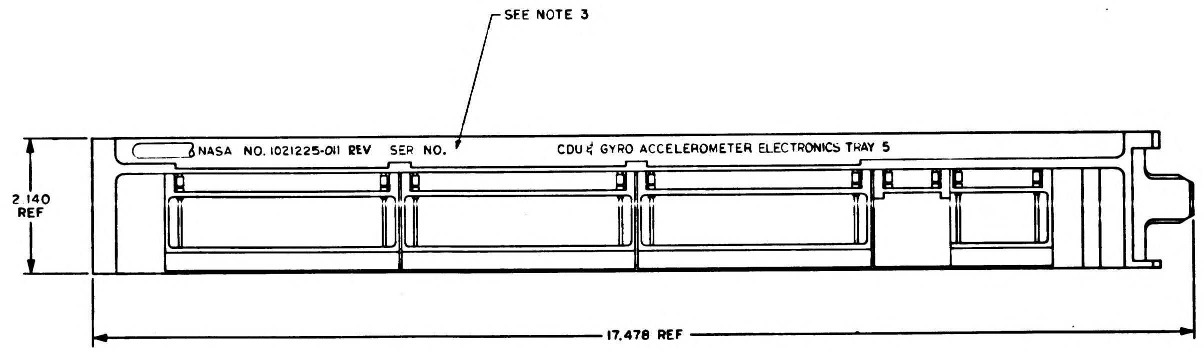
CODE IDENT NO
SIZE E
1021225
SCALE 1:1
SHEET 1 OF 1

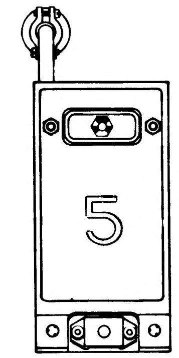
1021225 A

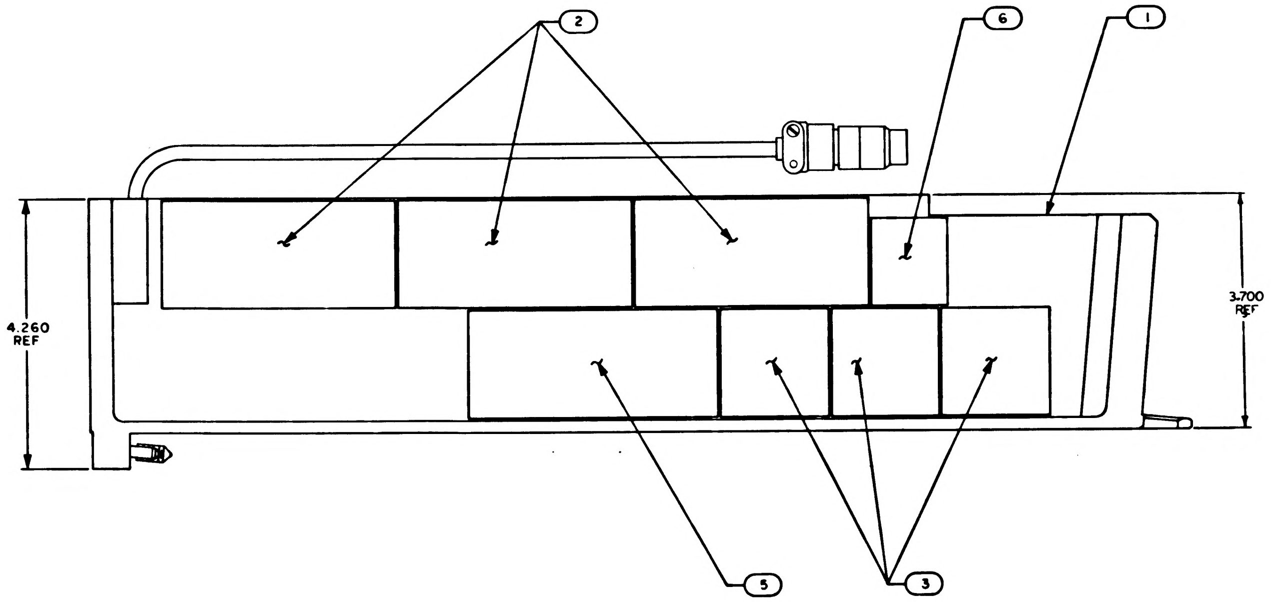
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

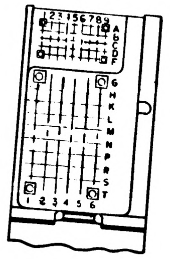
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13917	3-NOV-64	
B	REVISED PER TDRR 16981	MAR 65	


SEE NOTE 3
NASA NO. 1021225-011 REV SER NO.
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5
2.140 REF
17.478 REF





SEE NOTE 2



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S. 2,3, 5,6 AND 7 TO ITEM NO. 1 TO BE 13/17 IN.LB.
3. SERIALIZE AND MAKE (WHITE) .14/.10 HIGH PER ND1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

LIST OF PARTS AND MATERIALS

QUANTITY REQUIRED			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		6	1007561-011	CDU ZEROING & LOCK RELAYS
			1		5	1007558-011	FWD-BACKWARD CTR & CMPTR OUTPUT
			~~1~~		4	~~1007057~~	~~BACK-UP MODE ELECTRONICS~~
			3		3	1007555-011	CDU D TO A CONVERTER
			3		2	1007414-011	ENCODER
			1		1	1021215-011	FRAME ASSEMBLY

NEXT ASSY	USED ON	APPLICABLE DASH NO
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN R. Tamsen DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

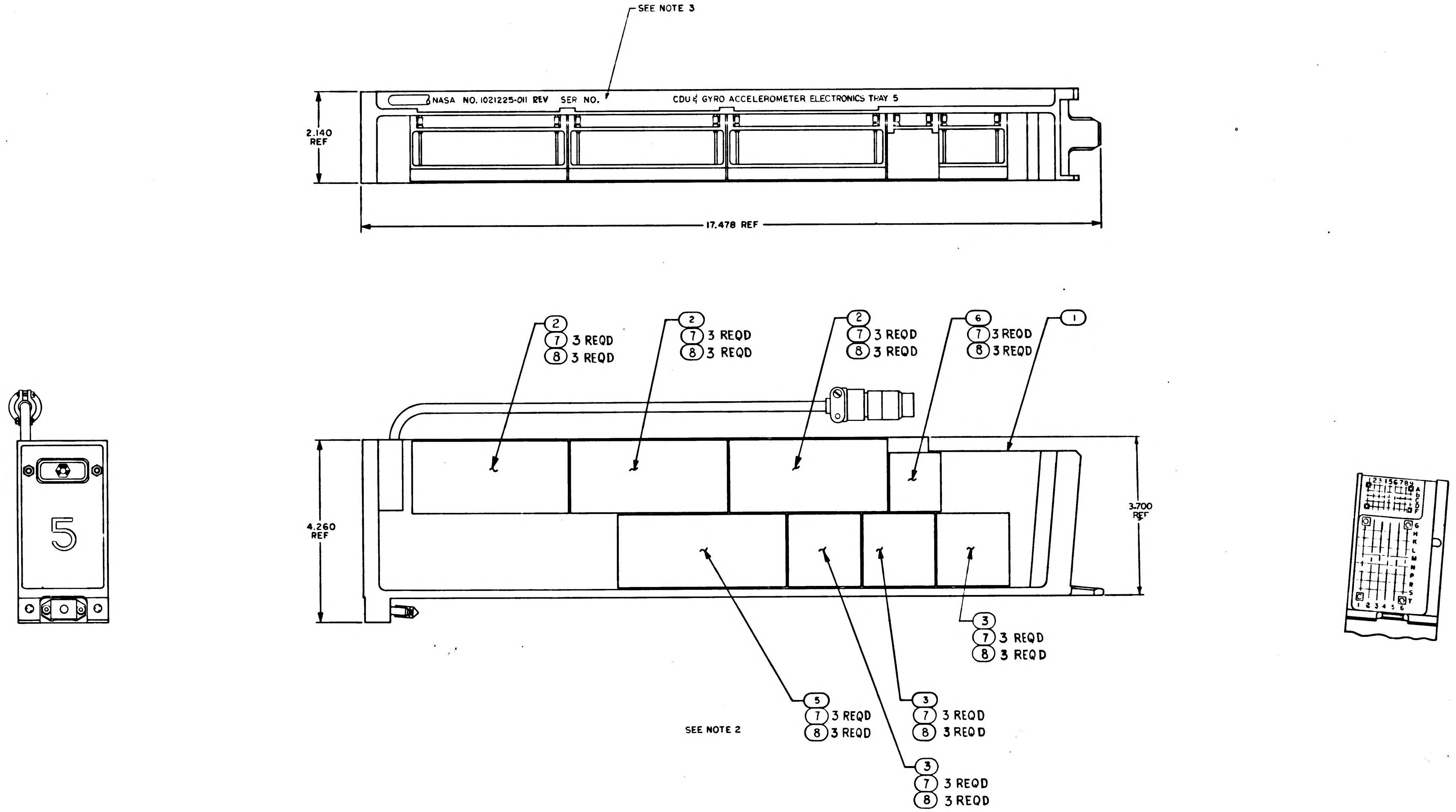
CDU AND GYRO ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 5

CODE IDENT NO
SIZE E
1021225
SCALE 1:1
SHEET OF 1

1021225 B

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 3917	5-NOV-64	
B	REVISED PER TDRR 16981	9-MAR-65	
C	REVISED PER TDRR 20786	20 JUL 65	


SEE NOTE 3
NASA NO. 1021225-011 REV SER NO.
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5
2.140 REF
17.478 REF
5
2 ⑦ 3 REQD ⑧ 3 REQD
2 ⑦ 3 REQD ⑧ 3 REQD
2 ⑦ 3 REQD ⑧ 3 REQD
6 ⑦ 3 REQD ⑧ 3 REQD
1
4.260 REF
3.700 REF
3 ⑦ 3 REQD ⑧ 3 REQD
5 ⑦ 3 REQD ⑧ 3 REQD
3 ⑦ 3 REQD ⑧ 3 REQD
3 ⑦ 3 REQD ⑧ 3 REQD
SEE NOTE 2
1 2 3 4 5 6 7 8 9
A B C D F
G H K L M N P R S T
1 2 3 4 5 6

NOTES:
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2. MOUNTING TORQUE TO SECURE ITEM NO'S. 2,3, 5,6 AND 7 TO ITEM NO. 1 TO BE 25/30 IN. LB.
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QUANTITY REQUIRED							
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			24		8	MS 15795-805	WASHER, FLAT
			24		7	NAS 1352-06-8	SCREW, CAP SOCKET HEAD
			1		6	1007561-011	CDU ZEROING & LOCK RELAYS
			1		5	1007558-011	FWD-BACKWARD CTR & CMPTR OUTPUT
			~~1~~		4	~~1007057~~	~~BACK-UP MODE ELECTRONICS~~
			3		3	1007555-011	CDU D TO A CONVERTER
			3		2	1007414-011	ENCODER
			1		1	1021215-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO
1021207-011		-011

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Tamsen DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

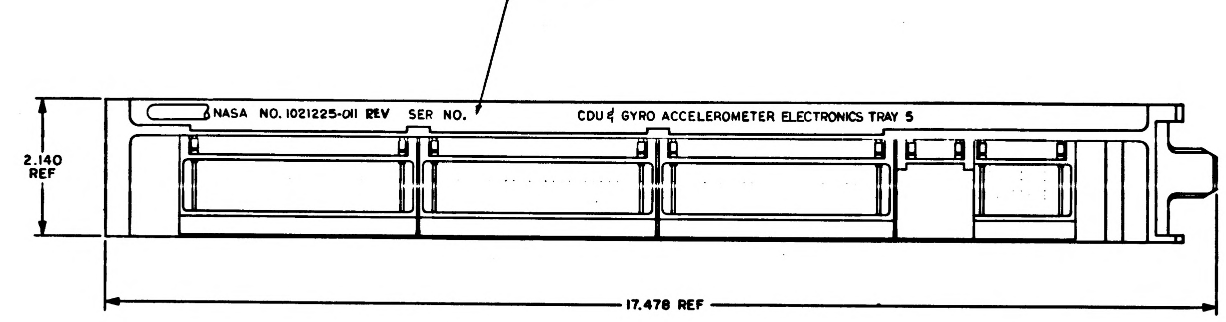
CDU AND GYRO ACCELEROMETER
ELECTRONICS ASSEMBLY
TRAY 5

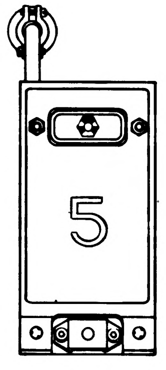
CODE IDENT NO 80230
SIZE E
1021225
SCALE 1:1
SHEET 1 OF 1

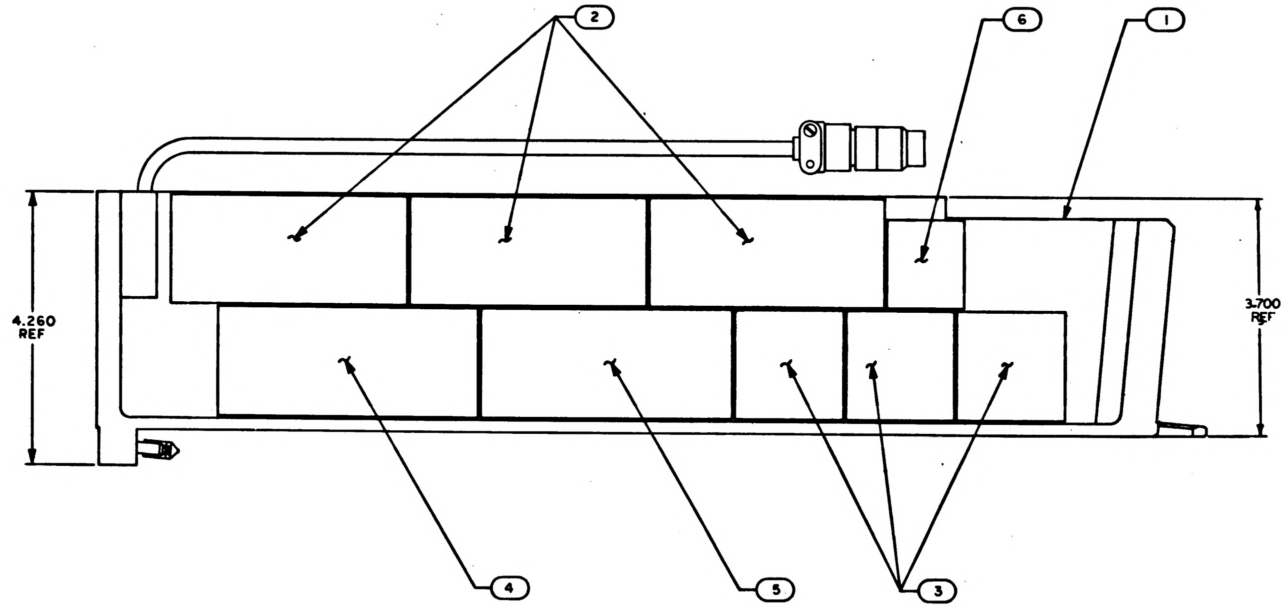
1021225 C

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

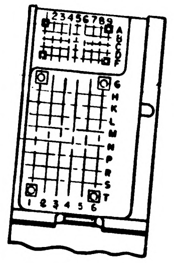
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL


SEE NOTE-3
NASA NO. 1021225-011 REV SER NO.
CDU & GYRO ACCELEROMETER ELECTRONICS TRAY 5
2.140 REF
17.478 REF





SEE NOTE 2



NOTES:

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QUANTITY REQUIRED								
				1		6	1007061	CDU ZEROING & LOCK RELA
				1		5	1007058	FWD-BACKWARD CTR & CMPTR TPUT
				1		4	1007057	BACK-UP MODE ELECTRONI
				3		3	1007055	CDU D TO A CONVERTER
				3		2	1007054	ENCODER
				1		1	1021215-011	FRAME ASSEMBLY
				011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tanner DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL JUN 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CDU AND GYRO ACCELEROMETER ELECTRONICS ASSEMBLY TRAY 5

CODE IDENT NO.
SIZE E
1021225
SCALE 1:1
SHEET 1 OF 1

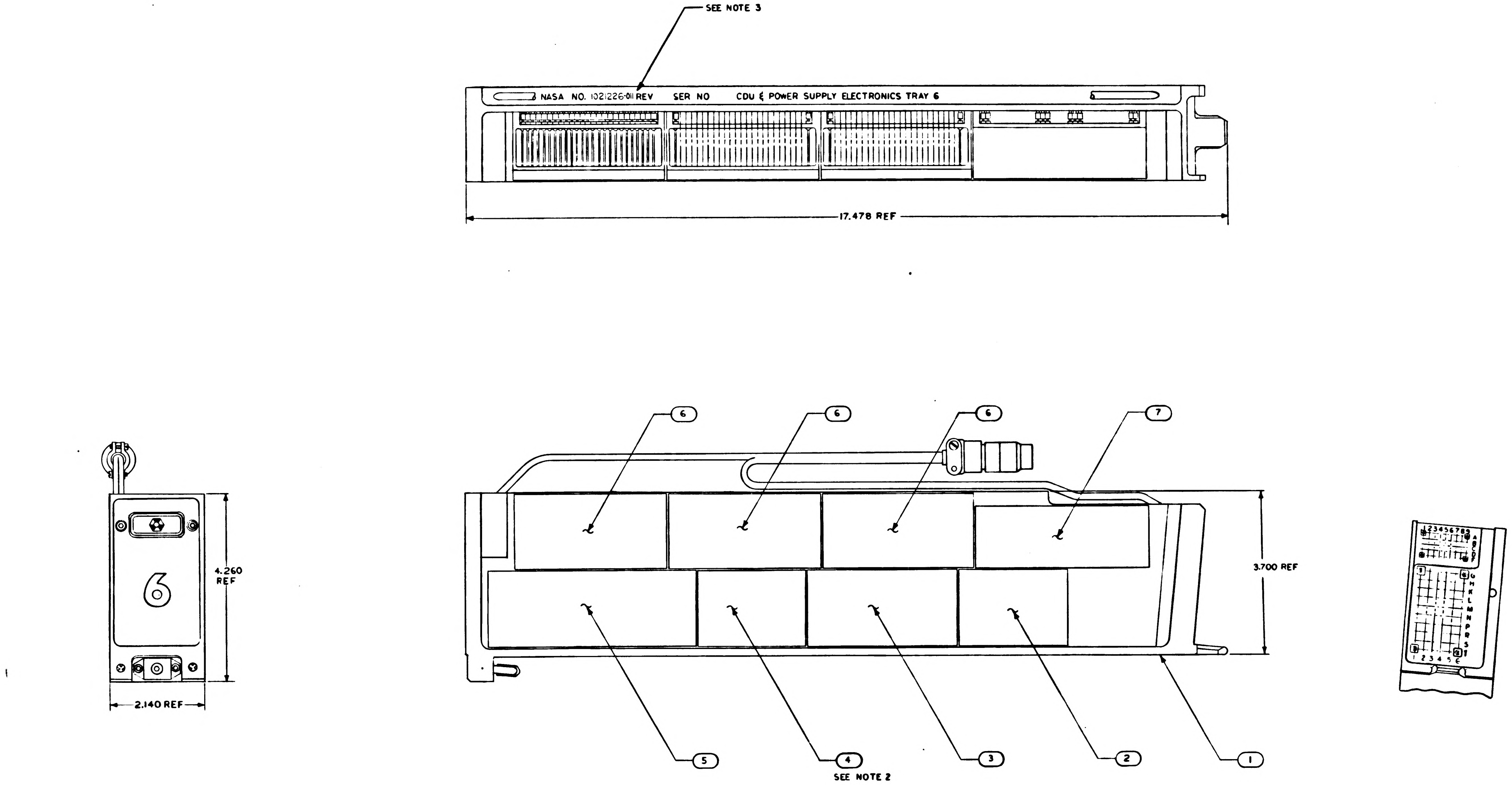
1021225

MASTER

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR .0981	[illegible]	[illegible]



NOTES:

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			1		7	1007462-011	CDU RESOLVER LOADS
			3		6	1007560-011	MOTOR DRIVE AMP & SELECTOR CIRCUIT
			1		5	1007438-011	AMPLIFIER 5% 60CPS
			1		4	1007546-011	AAC FILTER & MULTIVIBRATOR 800CPS
			1		3	1007437-011	AMPLIFIER 1% 800CPS
			1		2	1007564-011	CDU ZEROING TRANS. RELAYS
			1		1	1021216-011	FRAME ASSEMBLY
			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − —
DECIMALS + — − —
ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomason DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL R. Ching 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

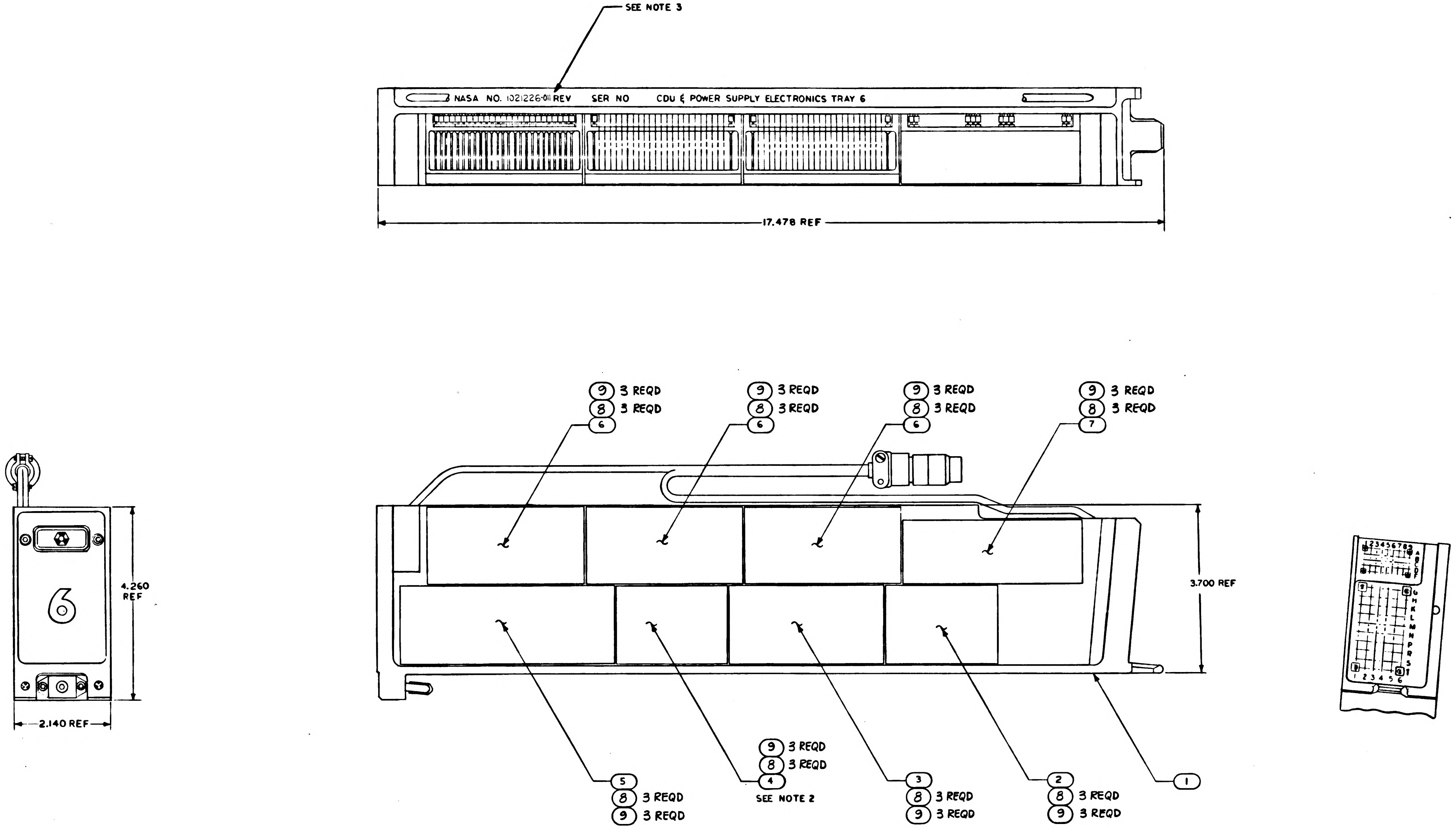
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CDU AND POWER SUPPLY
ELECTRONICS ASSEMBLY
TRAY 6

CODE IDENT NO
SIZE E
1021226
SCALE 1:1
SHEET 1 OF 1

1021226 A

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR [illegible]81	[illegible]	[illegible]
B	REVISED PER TDRR 2[illegible]36	[illegible] 65	[illegible]



SEE NOTE 3
NASA NO. 1021226-011 REV SER NO CDU & POWER SUPPLY ELECTRONICS TRAY 6
17.478 REF
9 3 REQD
8 3 REQD
6
9 3 REQD
8 3 REQD
6
9 3 REQD
8 3 REQD
6
9 3 REQD
8 3 REQD
7
3.700 REF
6
4.260 REF
2.140 REF
5
8 3 REQD
9 3 REQD
9 3 REQD
8 3 REQD
4
SEE NOTE 2
3
8 3 REQD
9 3 REQD
2
8 3 REQD
9 3 REQD
1

NOTES:

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QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			24		9	MS15795-805	WASHER, FLAT
			24		8	NAS1352-06-8	SCREW, CAP SOCKET HEAD
			1		7	1007462-011	CDU RESOLVER LOADS
			3		6	1007560-011	MOTOR DRIVE AMP & SELECTOR CIRCUIT
			1		5	1007438-011	AMPLIFIER 5% 60 CPS
			1		4	1007546-011	AAC FILTER & MULTIVIBRATOR 800 CPS
			1		3	1007437-011	AMPLIFIER 1% 800 CPS
			1		2	1007564-011	CDU ZEROING TRANS. RELAYS
			1		1	1021216-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

M.I.T.
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN R. Tmaznl DATE 2 MAY 64
CHECKED 5 JUN 64
APPROVAL R. C. 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CDU AND POWER SUPPLY
ELECTRONICS ASSEMBLY
TRAY 6

CODE IDENT NO 80230
SIZE E
1021226
SCALE 1:1
SHEET 1 OF 1

1021226 B

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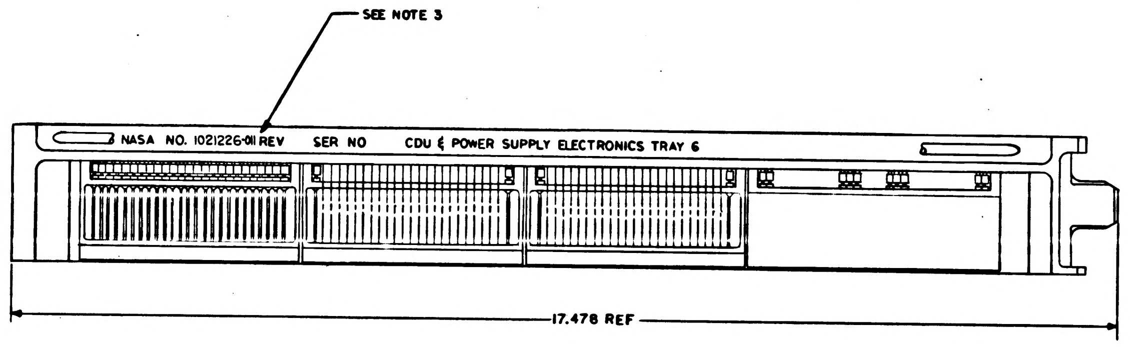
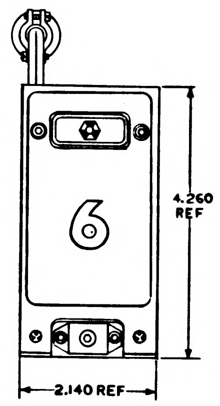
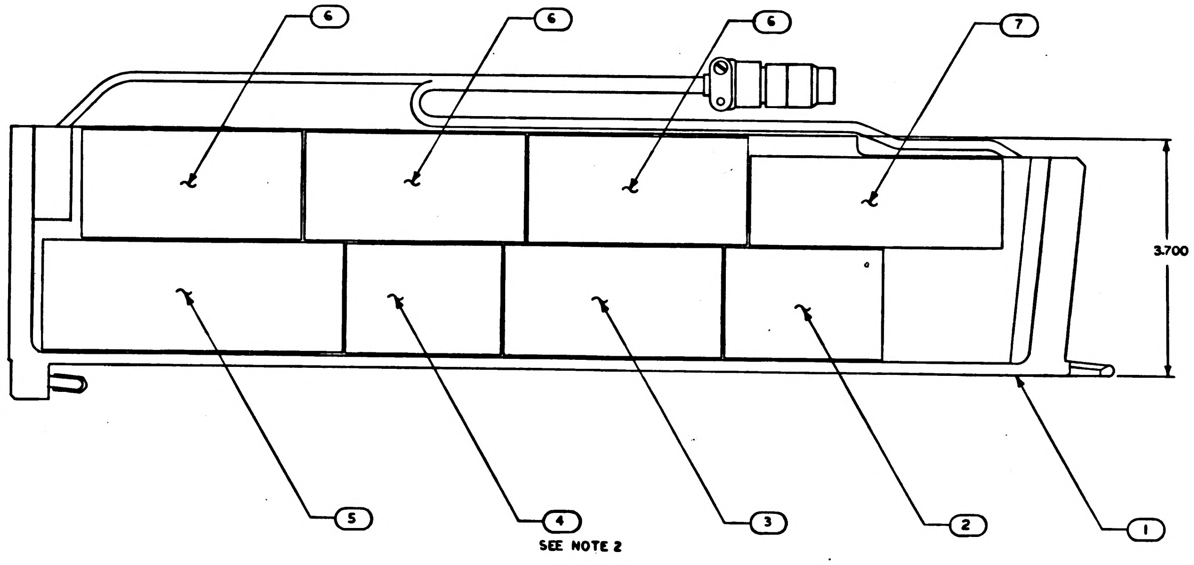
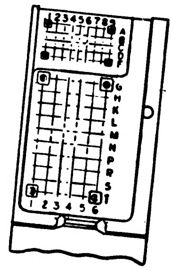
REVISIONS TDRR 10907			
SYM	DESCRIPTION	DATE	APPROVAL









NOTES:

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2. MOUNTING TORQUE TO SECURE FIND NO'S 2,3,4,5,6 AND 7 TO FIND NO. 1 TO BE 13/17 IN LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023

MASTER

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		7	1007062	CDU RESOLVER LOADS
			3		6	1007060	MOTOR DRIVE AMP & SELEC CIRC
			1		5	1007048	AMPLIFIER 5% 60CPS
			1		4	1007046	AAC FILTER & MULTIVIBRATOR 800CPS
			1		3	1007047	AMPLIFIER 1% 800CPS
			1		2	1007064	CDU ZEROING TRANS. RELA
			1		1	1021216-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Townsend DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CDU AND POWER SUPPLY
ELECTRONICS ASSEMBLY
TRAY 6

CODE IDENT NO.
SIZE E
1021226
SCALE 1:1
SHEET 1 OF 1

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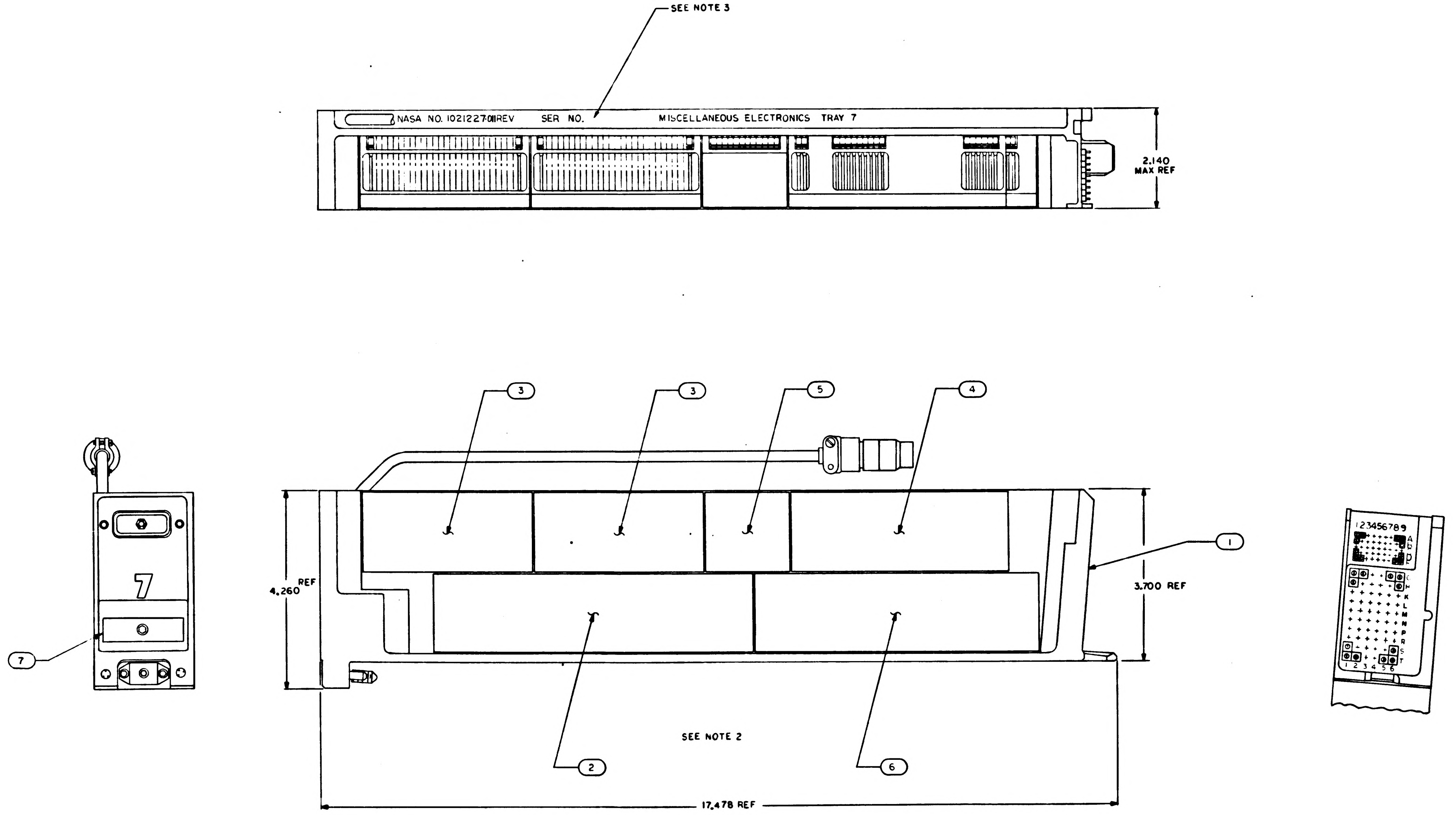
REVISIONS TDRR 109[illegible]

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR-16981	9 MAR 65	[illegible]



- NOTES
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QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		7	1007163	CONNECTOR PLUG ELEC
			1		6	1007518-011	IMU TEMP IND ALARM & BACK-UP
			1		5	1007563-011	CDU FIXED RESOLUTION TRANS & ENT
			1		4	1007426-011	IMU TEMPERATURE CONTROLLER
			2		3	1007414-011	ENCODER
			1		2	1007412-011	PULSE TORQUING POWER SUPPLY
			1		1	1021217-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

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CONTRACT NAS 9-497

AC SPARK PLUG DIVISION. GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN R. Tamsen DATE 26 MAY 64
CHECKED [illegible] 5 JUN 64
APPROVAL K. Dahl 6/5/64
APPROVAL [illegible] 8 JUN 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 14 [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

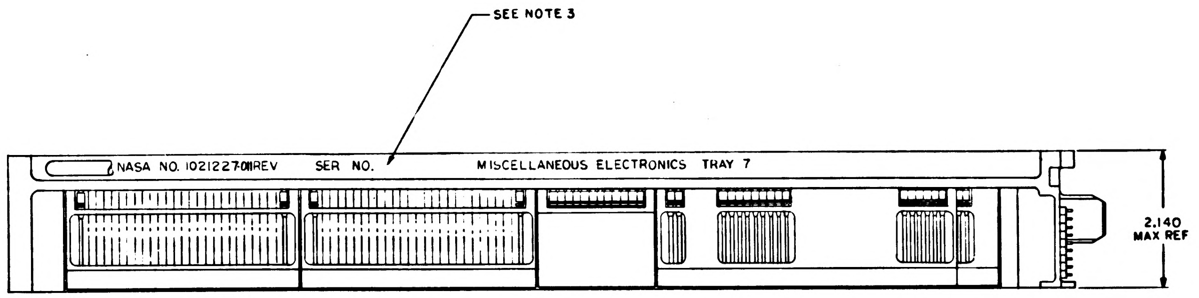
MISCELLANEOUS
ELECTRONICS ASSEMBLY
TRAY 7

CODE IDENT NO
SIZE E
1021227
SCALE 1:1
SHEET 1 OF 1

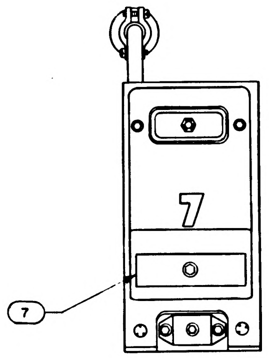
1021227 A

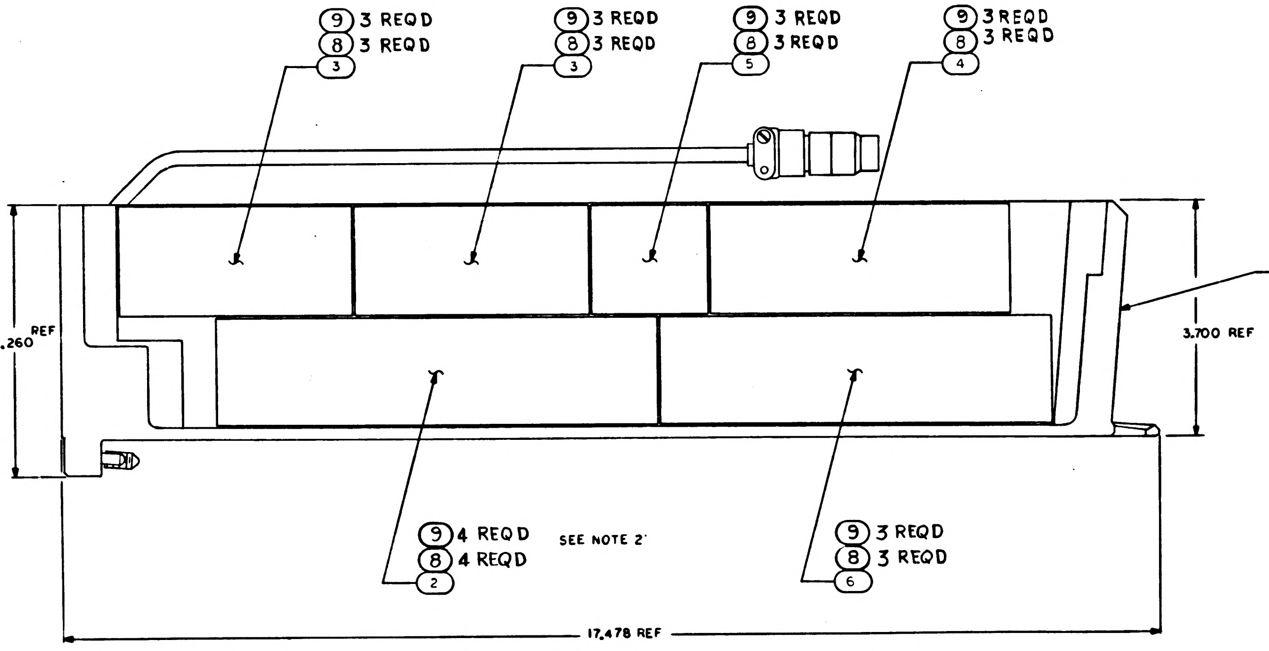
REVISIONS TDRR 10909

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR-16981	9 MAR 65	
B	REVISED PER TDRR 20786	20 JUL 65	RW



SEE NOTE 3
NASA NO. 1021227-011 REV
SER NO.
MISCELLANEOUS ELECTRONICS TRAY 7
2.140 MAX REF





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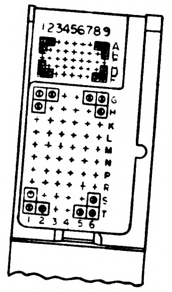

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NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S. 2,3,4,5 AND 6 TO ITEM NO.1 TO BE 25/30 IN. LB.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

QUANTITY REQUIRED				EFFEC TIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			19		9	MS15795-805	WASHER, FLAT
			19		8	NAS-1352-06-8	SCREW, CAP SOCKET HEAD
			1		7	1007163	CONNECTOR PLUG ELEC
			1		6	1007518-011	IMU TEMP IND ALARM & BACK-UP CONT
			1		5	1007563-011	CDU FIXED RESOLUTION TRANS & ENTRY
			1		4	1007426-011	IMU TEMPERATURE CONTROLLER
			2		3	1007414-011	ENCODER
			1		2	1007412-011	PULSE TORQUING POWER SUPPLY
			1		1	1021217-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. Tamsen DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 JUL 64

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

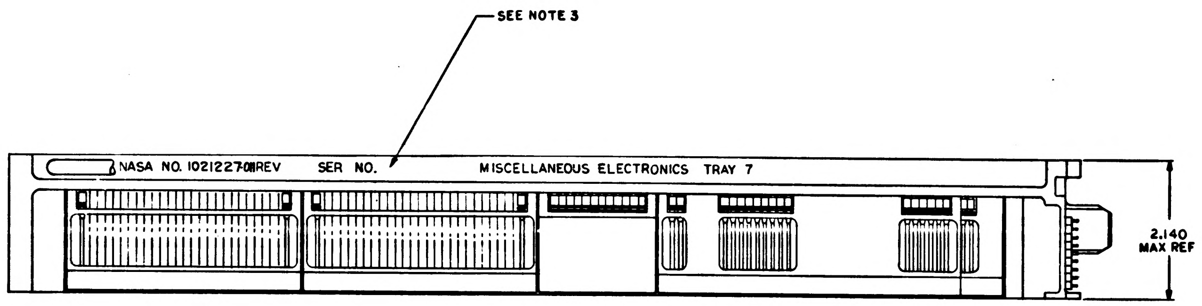
MISCELLANEOUS
ELECTRONICS ASSEMBLY
TRAY 7

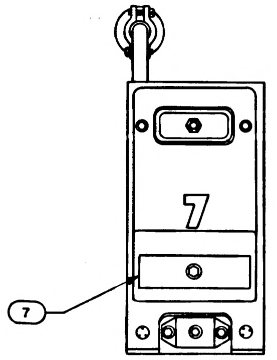
CODE IDENT NO 80230
SIZE E
1021227
SCALE 1:1
SHEET 1 OF

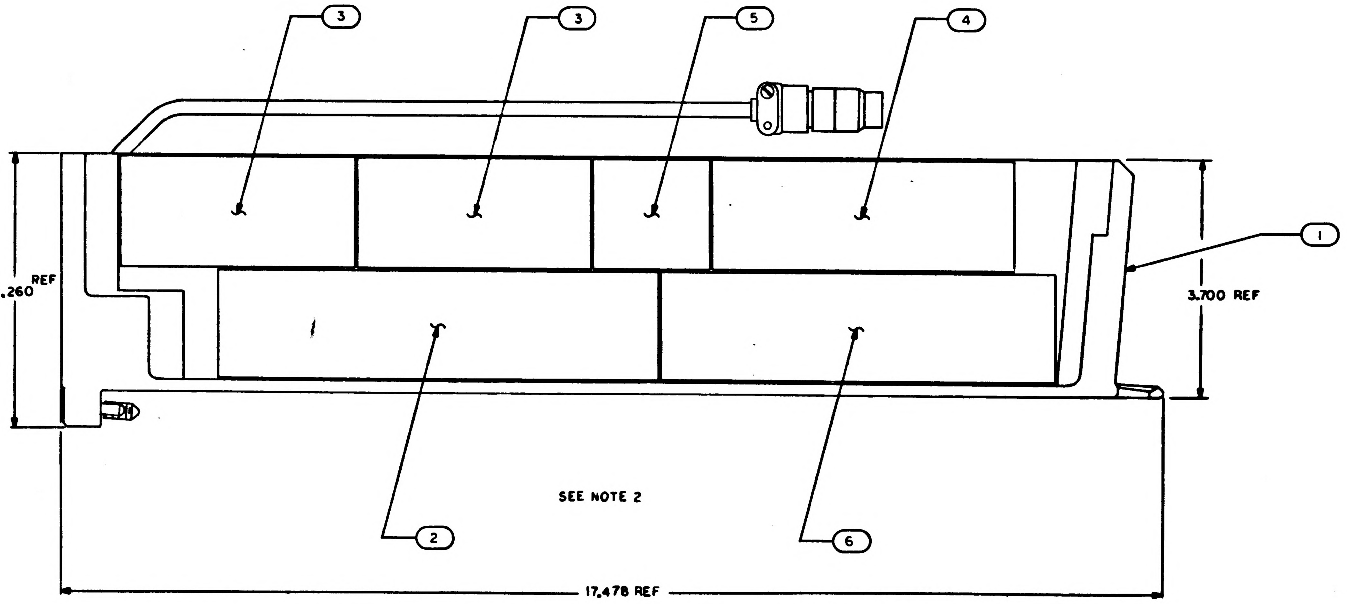
1021227 B

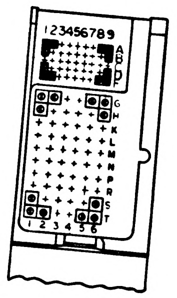
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10407			
SYM	DESCRIPTION	DATE	APPROVAL









NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEM NO'S. 2,3,4,5 AND 6 TO ITEM NO. 1 TO BE 13/17 IN. LB.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		7	1007163	CONNECTOR PLUG ELEC
			1		6	1007162	IMU TEMP IND ALARM & BACK-UP CONT
			1		5	1007063	CDU FIXED RESOLUTION TRANS & ENTRY
			1		4	1007056	IMU TEMPERATURE CONTROLLER
			2		3	1007054	ENCODER
			1		2	1007052	PULSE TORQUING POWER SUPPLY
			1		1	1021217-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

MASTER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. T[illegible] DATE 26 MAY 64
CHECKED [illegible] 5 JUN 64
APPROVAL R. [illegible] 6/3/64
APPROVAL [illegible]
NASA APPROVAL [illegible] 7/6/64
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

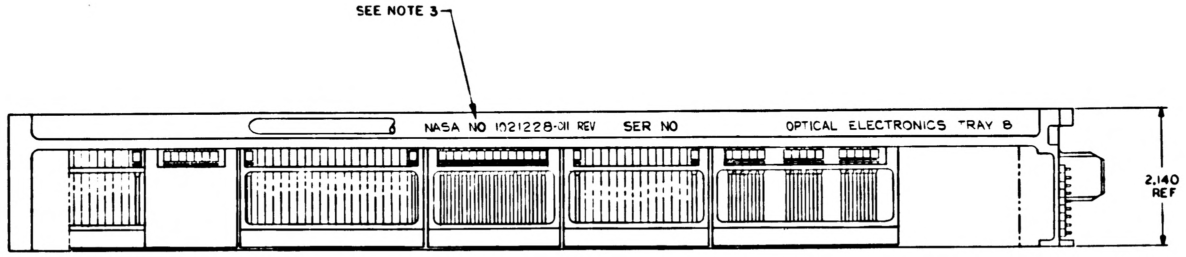
MISCELLANEOUS
ELECTRONICS ASSEMBLY
TRAY 7

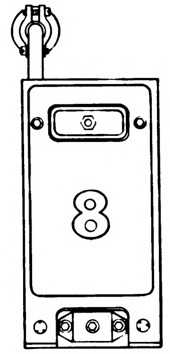
CODE IDENT NO.
SIZE E
1021227
SCALE 1:1
SHEET 1 OF 1

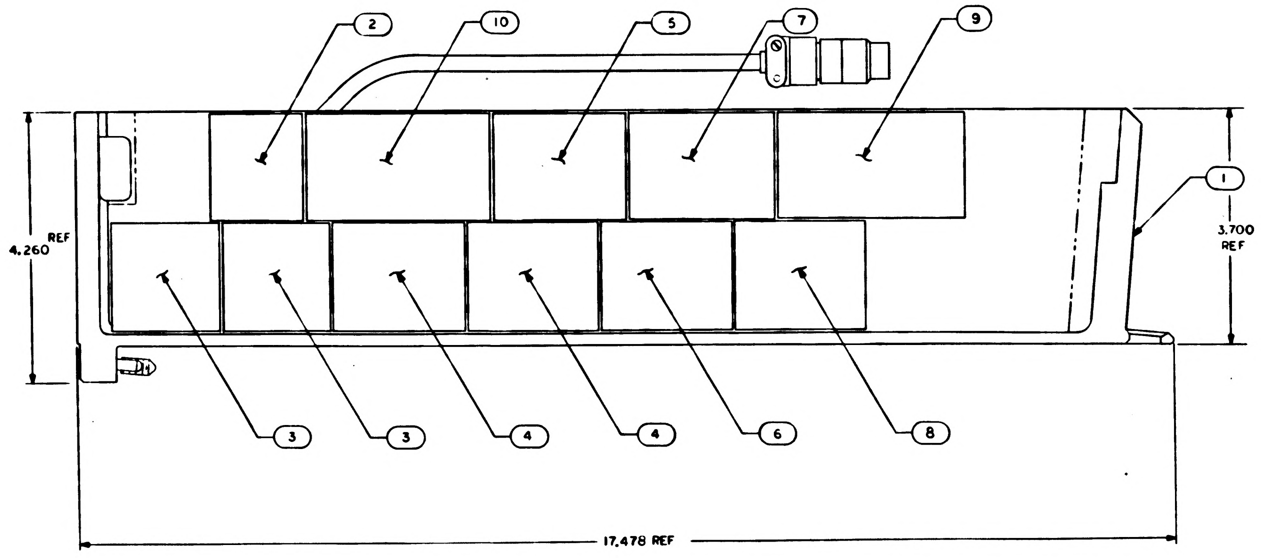
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

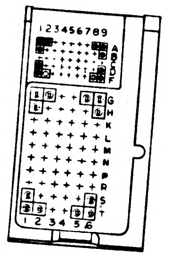
REVISIONS TDRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 16981	9-MAR 65	









NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEMS NO.S 2,3,4,5,6,7, 8,9 AND 10 TO ITEM NO.1 TO BE 13/17 IN.LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		10	1007484-011	BUFFER CIRCUIT
			1		9	1007485-011	RELAY
			1		8	1007523-011	RESOLVER DRIVE AMP
			1		7	1007481-011	MOTOR DRIVE PREAMP
			1		6	1007483-011	COSECANT GENERATOR
			1		5	1007480-011	TWO-SPEED SWITCH
			2		4	1007482-011	MOTOR DRIVE AMP
			2		3	1007555-011	CDU D TO A CONVERTER
			1		2	1007487-011	ZERO OPTICS
			1		1	1021218-011	FRAME ASSY

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomasini DATE 23 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

OPTICAL
ELECTRONIC ASSEMBLY
TRAY 8

CODE IDENT NO
SIZE E
1021228
SCALE 1:1
SHEET 1 OF 1

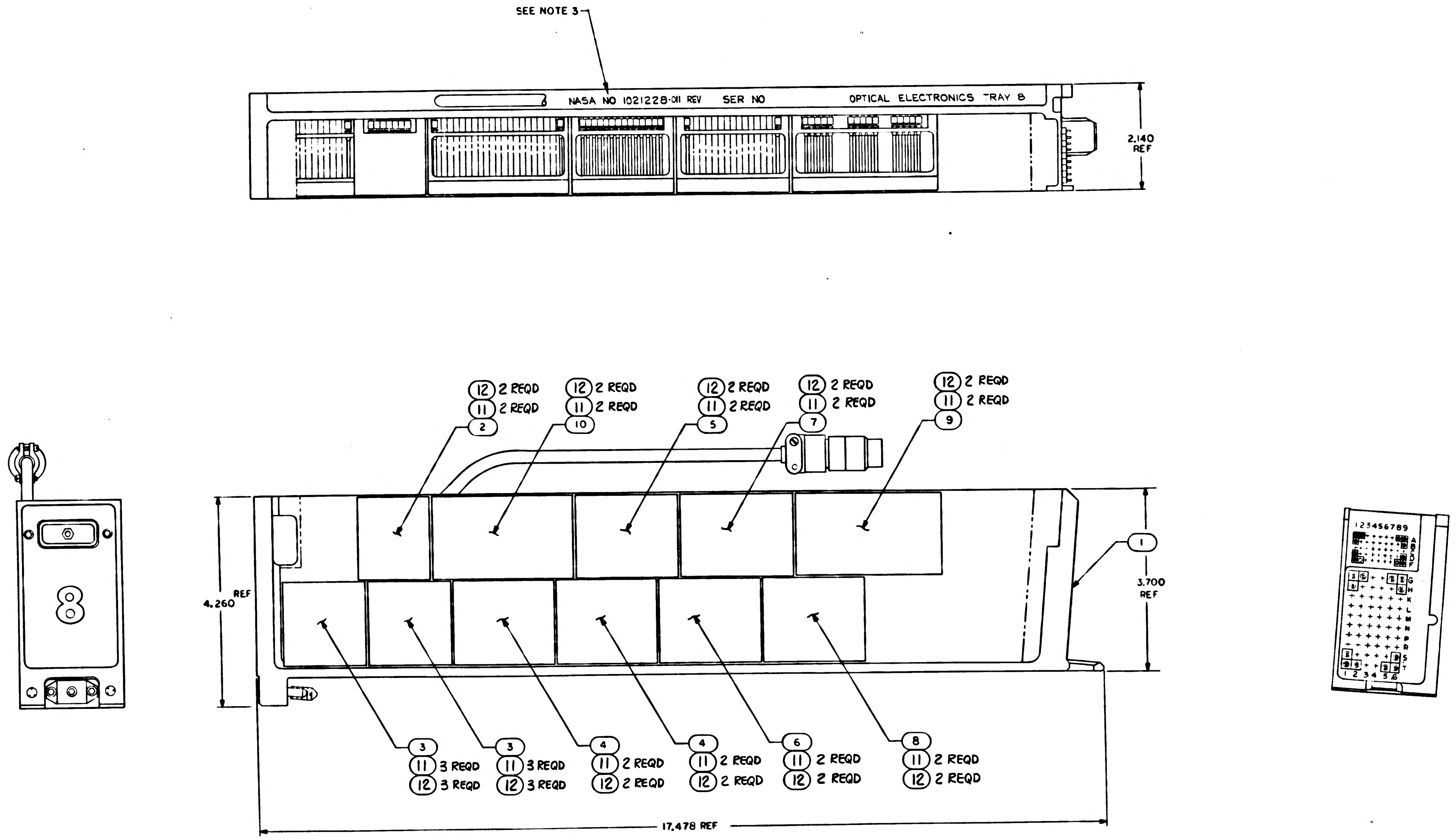
1021228 A

1051559

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10907

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 6981	MAR 65	
B	REVISED PER TDRR 20786	20 JUL 65	RWM


SEE NOTE 3
NASA NO 1021228-011 REV SER NO OPTICAL ELECTRONICS TRAY 8
2.140 REF
⑫ 2 REQD
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NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE ITEMS NO.S 2,3,4,5,6,7,8,9 AND 10 TO ITEM NO.1 TO BE 25/30 IN.LBS.
3. SERIALIZE AND MARK (WHITE).14/.10 HIGH PER ND1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			24		12	MS15795-805	WASHER, FLAT
			24		11	NAS1352-06-8	SCREW, CAP SOCKET HEAD
			1		10	1007484-011	BUFFER CIRCUIT
			1		9	1007485-011	RELAY
			1		8	1007523-011	RESOLVER DRIVE AMP
			1		7	1007481-011	MOTOR DRIVE PREAMP
			1		6	1007483-011	COSECANT GENERATOR
			1		5	1007480-011	TWO-SPEED SWITCH
			2		4	1007482-011	MOTOR DRIVE AMP
			2		3	1007555-011	CDU D TO A CONVERTER
			1		2	1007487-011	ZERO OPTICS
			1		1	1021218-011	FRAME ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − —
DECIMALS + — − —
ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN R. Tamaru DATE 23 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 8 JUN 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

OPTICAL
ELECTRONIC ASSEMBLY
TRAY 8

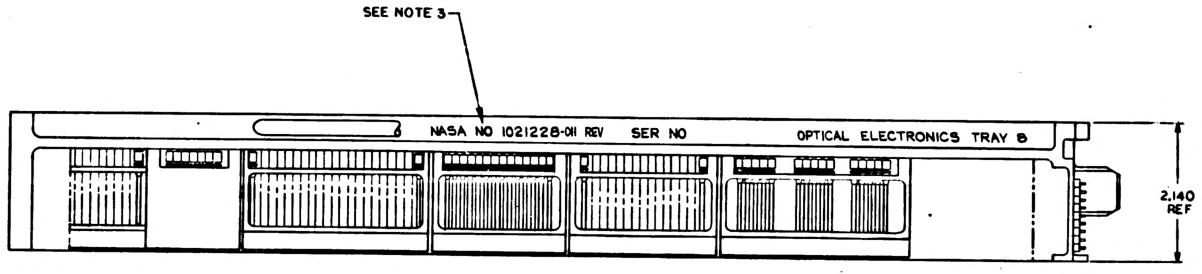
CODE IDENT NO 80230
SIZE E
1021228
SCALE 1:1
SHEET OF

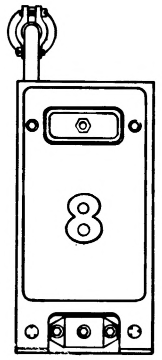
1021228 B

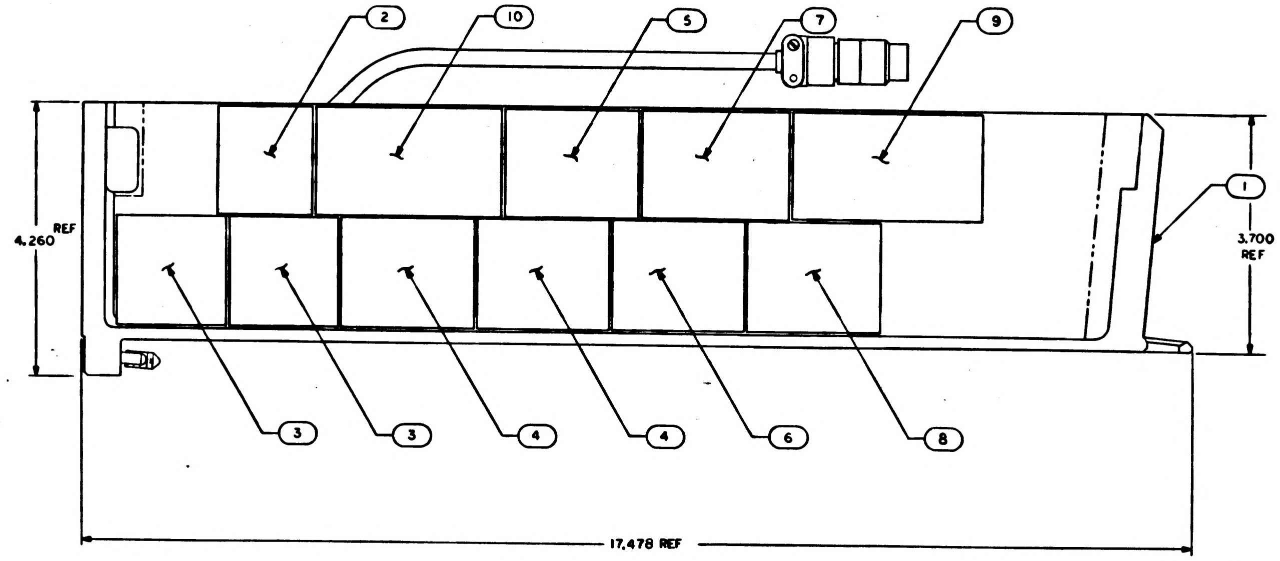
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

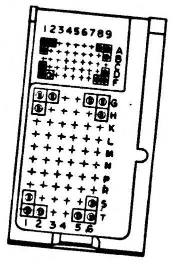
REVISIONS DRR 10907

SYM	DESCRIPTION	DATE	APPROVAL









NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2 MOUNTING TORQUE TO SECURE ITEMS NO.S 2,3,4,5,6,7,8,9 AND 10 TO ITEM NO.1 TO BE 13/17 IN.LB.
3 SERIALIZE AND MARK (WHITE).14/.10 HIGH PER ND 1002023

			1		10	1015136	BUFFER CIRCUIT
			1		9	1015137	RELAY
			1		8	1015123	RESOLVER DRIVE AMP
			1		7	1015113	MOTOR DRIVE PREAMP
			1		6	1015124	COSECANT GENERATOR
			1		5	1015104	TWO-SPEED SWITCH
			2		4	1015121	MOTOR DRIVE AMP
			2		3	1007055	CDU D TO A CONVERTER
			1		2	1015154	ZERO OPTICS
			1		1	1021218-011	FRAME ASSY
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

1021207-011		-011
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

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MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomasal DATE 23 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 6 JUN 64
NASA APPROVAL
MIT APPROVAL 14 July 64

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

OPTICAL
ELECTRONIC ASSEMBLY
TRAY B

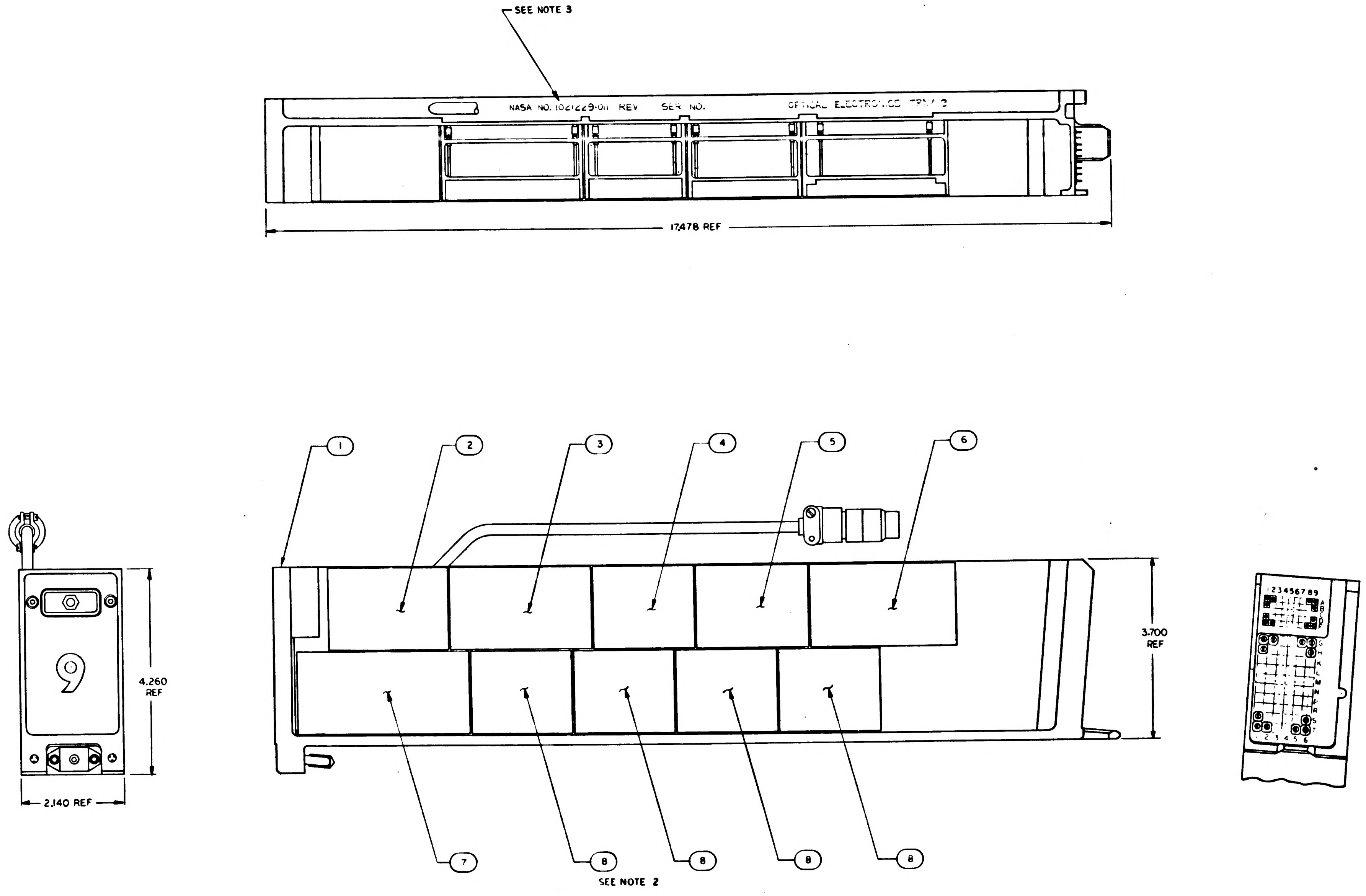
CODE IDENT NO.
SIZE E
1021228
SCALE 1:1
SHEET 1 OF 1

1021228

MASTER

NOTICE. WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TORR	9-MAR-65	



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE FIND NO'S 2,3,4,5,6,7 AND 8 TO FIND NO 1 TO BE 13/17 IN LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023
4. **APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULES AND TRAY. CLEANING IS PERMITTED.**

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			4		8	1007482-011	MOTOR DRIVE AMP
			1		7	1007488-011	RESISTOR AND CAPACITOR
			1		6	1007485-011	REL
			1		5	1007486-021	SERVO MOTOR DRIVE PREAMP
			1		4	1007480-011	TWO SPEED SWITCH
			1		3	1007484-011	BUFFER CIRCUIT
			1		2	1007401-011	ISOLATION TRANSFORMER
			1		1	1021219-011	FRAME ASSY
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011
APPLICATION		

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DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN C. Tamason DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL 7/14/64
MIT APPROVAL

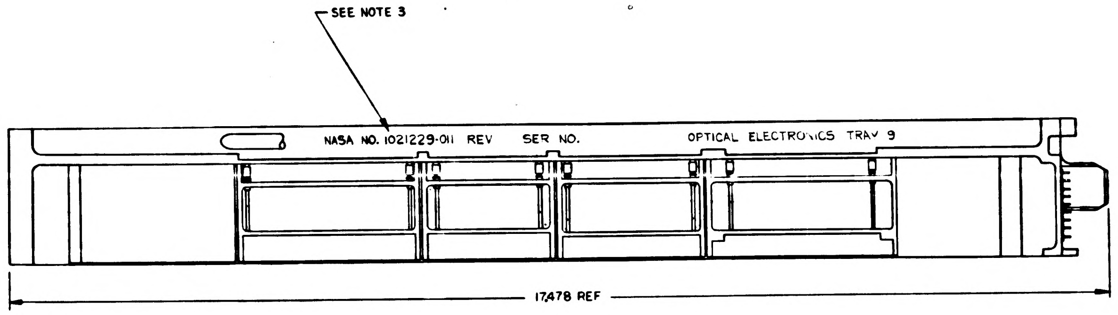
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

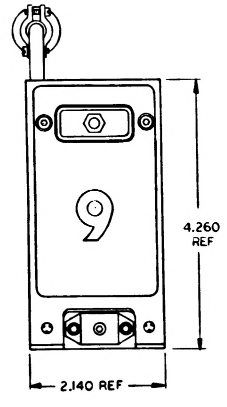
OPTICAL
ELECTRONICS ASSEMBLY
TRAY 9

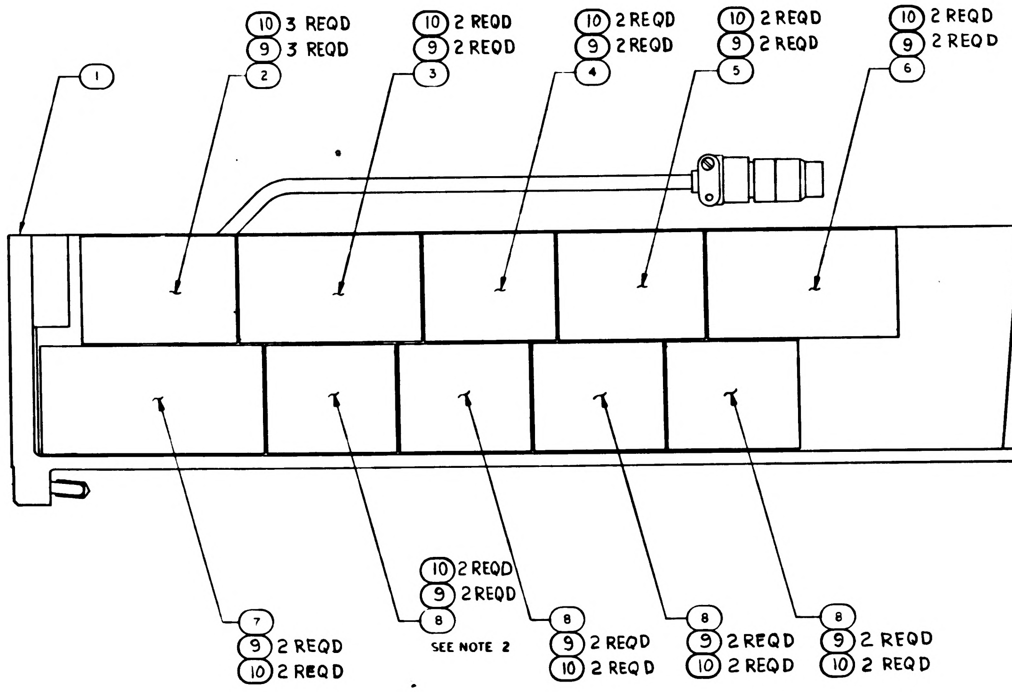
CODE IDENT NO.
SIZE E
1021229
SCALE 1:1
SHEET 1 OF 1

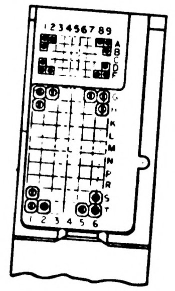
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 169	9-MAR 65	
B	REVISED PER TDRR 20	20 JUL 65	R.W.H


SEE NOTE 3
NASA NO. 1021229-011 REV SER NO. OPTICAL ELECTRONICS TRAY 9
17.478 REF


9
4.260 REF
2.140 REF


1
10 3 REQD
9 3 REQD
2
10 2 REQD
9 2 REQD
3
10 2 REQD
9 2 REQD
4
10 2 REQD
9 2 REQD
5
10 2 REQD
9 2 REQD
6
3.700 REF
7
9 2 REQD
10 2 REQD
10 2 REQD
9 2 REQD
8
SEE NOTE 2
8
9 2 REQD
10 2 REQD
8
9 2 REQD
10 2 REQD
8
9 2 REQD
10 2 REQD


1 2 3 4 5 6 7 8 9
A
B
C
D
1 2 3 4 5 6

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE FIND NO'S. 2, 3, 4, 5, 6, 7 AND 8 TO FIND NO. 1. TO BE 25/30 IN. LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023.

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			21		10	MS 15795-805	WASHER, FLAT
			21		9	NAS 1352-06-8	SCREW, CAP SOCKET HEAD
			4		8	1007482-011	MOTOR DRIVE AMP
			1		7	1007488-011	RESISTOR AND CAPACITOR
			1		6	1007485-011	RELAY
			1		5	1007486-021	SERVO MOTOR DRIVE PREAMP
			1		4	1007480-011	TWO-SPEED SWITCH
			1		3	1007484-011	BUFFER CIRCUIT
			1		2	1007401-011	ISOLATION TRANSFORMER
			1		1	1021219-011	FRAME ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN C. Tymkow DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/3/64
APPROVAL
NASA APPROVAL 5/14/64
MIT APPROVAL 14 Jul

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

OPTICAL
ELECTRONICS ASSEMBLY
TRAY 9

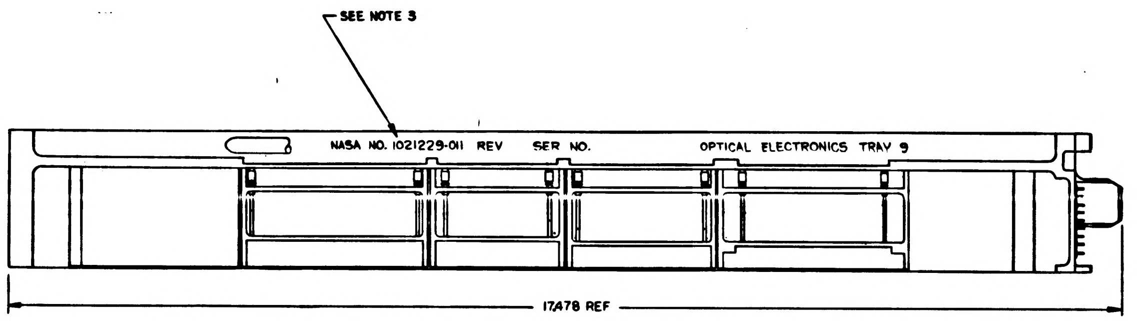
CODE IDENT NO
SIZE E
1021229
SCALE 1:1
SHEET 1 OF 1

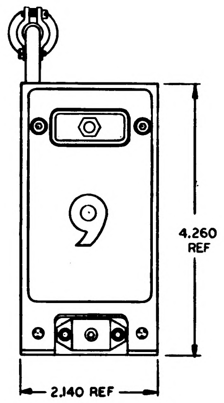
1021229 B

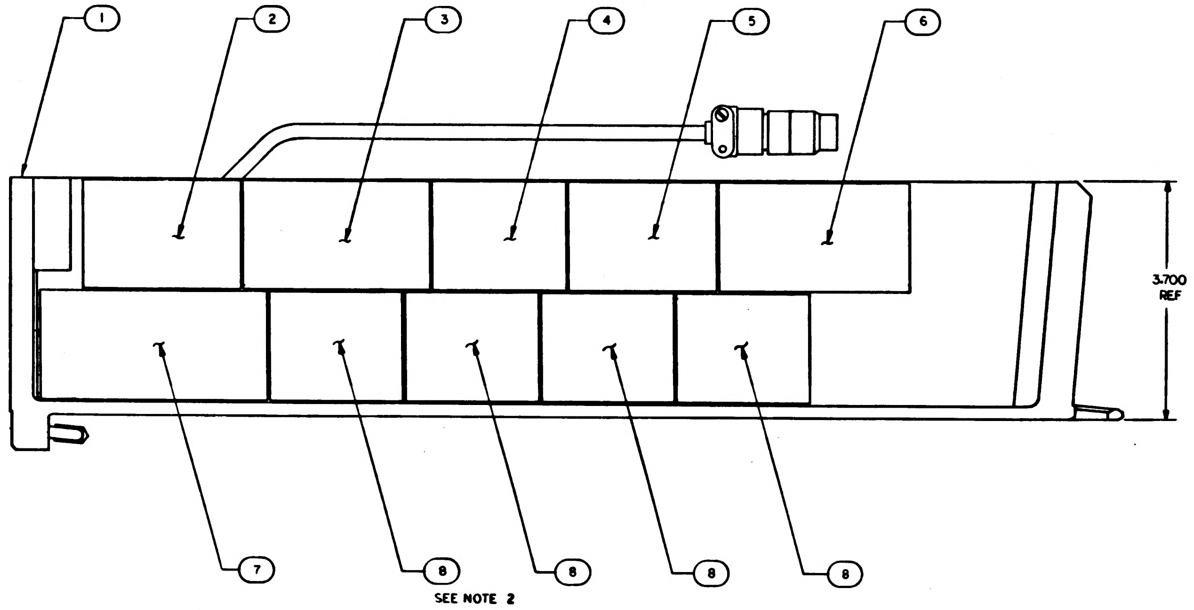
NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

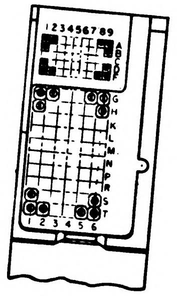
REVISIONS TORR 10907

SYM	DESCRIPTION	DATE	APPROVAL









NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MOUNTING TORQUE TO SECURE FIND NO'S 2,3,4,5,6,7 AND 8 TO FIND NO 1 TO BE 13/17 IN LB
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND 1002023

LIST OF PARTS AND MATERIALS

QUANTITY REQUIRED			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			4		8	1015121	MOTOR DRIVE AMP
			1		7	1015155	RESISTOR AND CAPACITOR
			1		6	1015137	RELAY
			1		5	1015149	SERVO MOTOR DRIVE PREAMP
			1		4	1015104	TWO-SPEED SWITCH
			1		3	1015136	BUFFER CIRCUIT
			1		2	1015138	ISOLATION TRANSFORMER
			1		1	1021219-011	FRAME ASSY

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. Tomczak DATE 27 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/8/64
APPROVAL
NASA APPROVAL 7/14/64
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

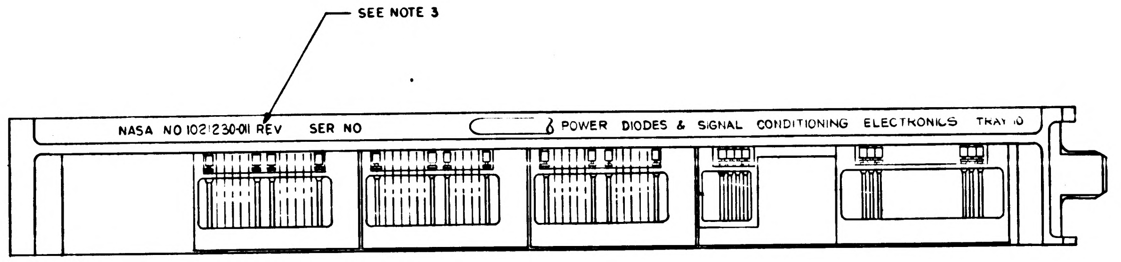
OPTICAL
ELECTRONICS ASSEMBLY
TRAY 9

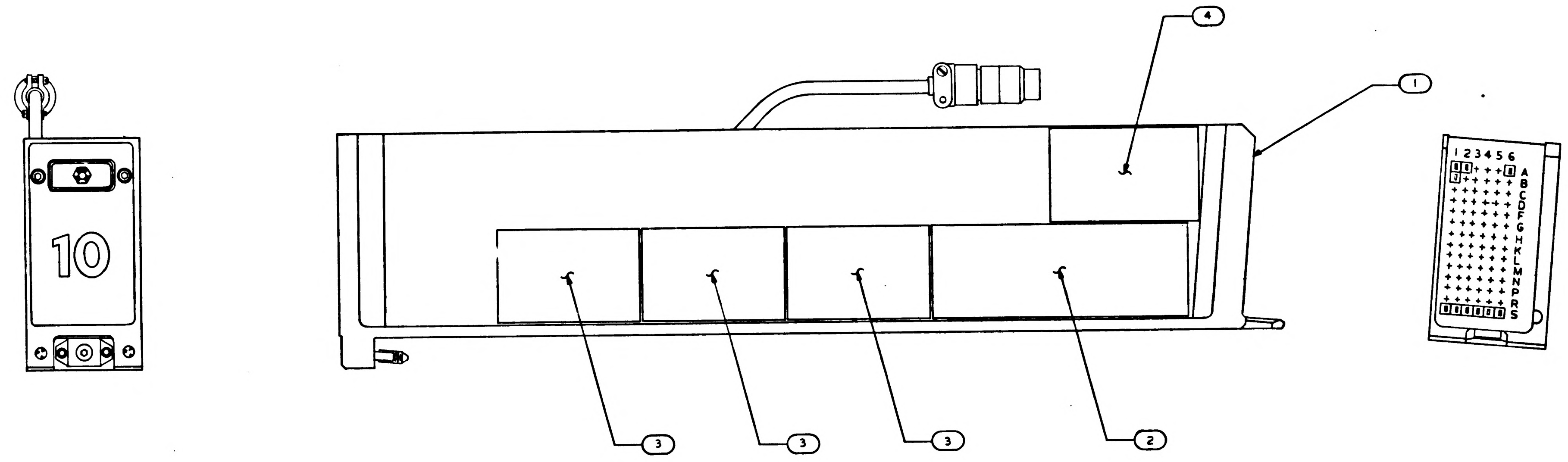
CODE IDENT NO.
SIZE E
1021229
SCALE 1:1
SHEET OF

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 10909

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 16981	9-MAR 65	M.G.


SEE NOTE 3
NASA NO 1021230-011 REV SER NO
POWER DIODES & SIGNAL CONDITIONING ELECTRONICS TRAY 10



SEE NOTE 2

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327
2. MOUNTING TORQUE TO SECURE FIND NO'S 2,3 AND 4 TO FIND NO.1 TO BE 13/17 IN.LB.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023
4. APPLY THIN LAYER OF THERMAL SILICONE COMPOUND FIND NO. (TBA) TO THE HEATSINK PORTION OF THE MOUNTING FACE OF ALL MODULES. AFTER ASSEMBLY OF THE MODULES ON THE TRAY, THE COMPOUND SHALL NOT BE VISIBLE ON THE EXPOSED SURFACES OF THE MODULE AND TRAY. CLEANING IS PERMITTED.

LIST OF PARTS AND MATERIALS

			011	EFFECTIVITY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			1		4	1007591-011	800 CPS COMPENSATION
			3		3	1007590-011	G&N SUB-SYS SUPPLY FILTER
			1		2	1007438-011	AMPLIFIER 5% 300 CPS
			1		1	1021220-011	FRAME ASSEMBLY

QUANTITY REQUIRED

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN C. Tamms DATE 25 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL 3 Jun 64
NASA APPROVAL
MIT APPROVAL 14 Jul 64

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

POWER DIODES AND SIGNAL CONDITIONING
ELECTRONICS ASSEMBLY
TRAY 10

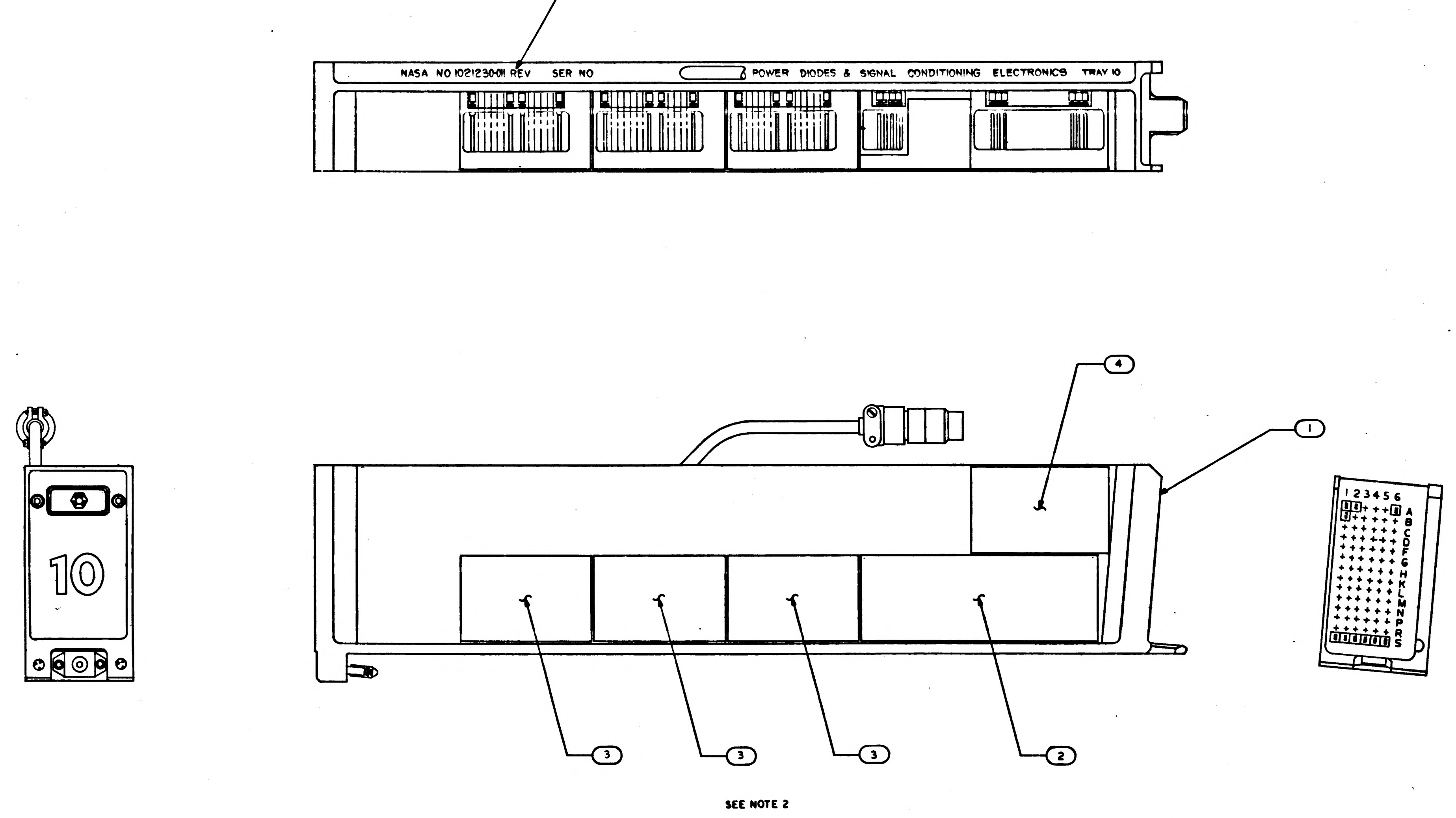
CODE IDENT NO
SIZE E
1021230
SCALE 1:1
SHEET 1 OF 1

1021230 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TCCR 10907

SYM	DESCRIPTION	DATE	APPROVAL


SEE NOTE 3
NASA NO 1021230-011 REV SER NO
POWER DIODES & SIGNAL CONDITIONING ELECTRONICS TRAY 10
10
4
1
3
3
3
2
SEE NOTE 2
1 2 3 4 5 6
A B C D F G H K L M N P R S

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327
2. MOUNTING TORQUE TO SECURE FIND NO'S 2,3 AND 4 TO FIND NO.1 TO BE 13/17 IN.LB.
3. SERIALIZE AND MARK (WHITE) .14/.10 HIGH PER ND1002023

MASTER

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			1		4	1007095	800 CPS COMPENSATION
			3		3	1007090	G&N SUB-SYS SUPPLY FILTER
			1		2	1007048	AMPLIFIER 5% 800 CPS
			1		1	1021220-011	FRAME ASSEMBLY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021207-011		-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

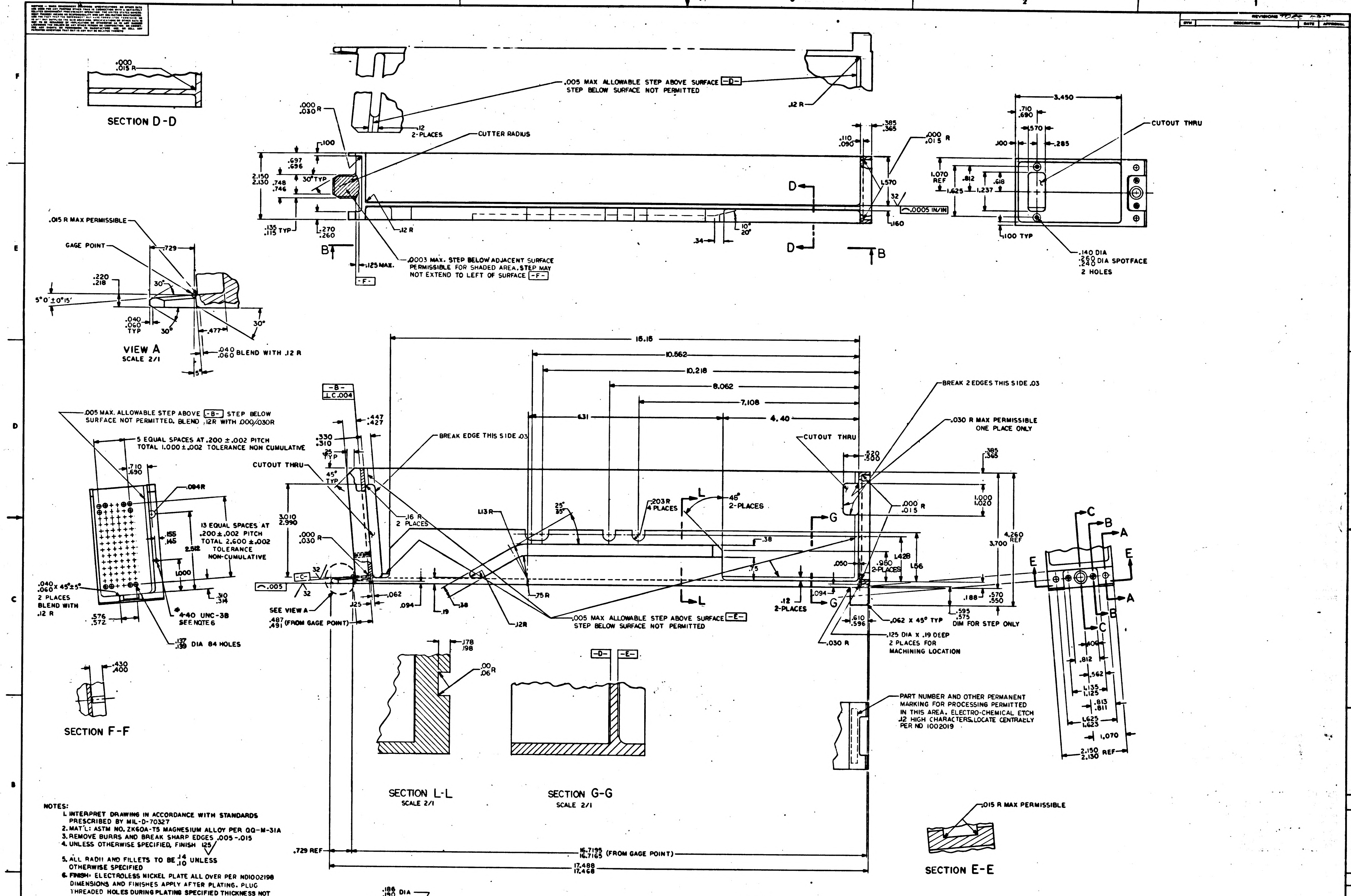
AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN R. T[illegible] DATE 26 MAY 64
CHECKED 5 JUN 64
APPROVAL 6/5/64
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

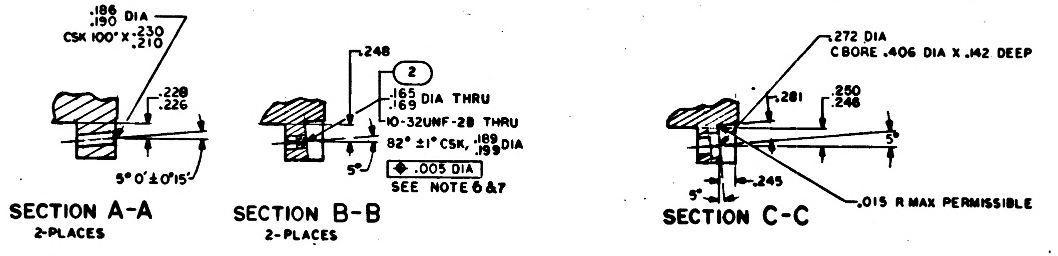
POWER DIODES AND SIGNAL CONDITIONING
ELECTRONICS ASSEMBLY
TRAY 10

CODE IDENT NO
SIZE E
1021230
SCALE 1:1
SHEET 1 OF 1

1021230


SECTION D-D
.000 .015 R
.005 MAX ALLOWABLE STEP ABOVE SURFACE -D- STEP BELOW SURFACE NOT PERMITTED
CUTTER RADIUS
.12 2-PLACES
.0003 MAX. STEP BELOW ADJACENT SURFACE PERMISSIBLE FOR SHADED AREA. STEP MAY NOT EXTEND TO LEFT OF SURFACE -F-
.125 MAX.
3.450
CUTOUT THRU
.140 DIA .260 .240 DIA SPOTFACE 2 HOLES
.100 TYP
.015 R MAX PERMISSIBLE
GAGE POINT
VIEW A SCALE 2/1
.040 .060 BLEND WITH .12 R
.005 MAX. ALLOWABLE STEP ABOVE -B- STEP BELOW SURFACE NOT PERMITTED. BLEND .12R WITH .000/.030R
5 EQUAL SPACES AT .200 ± .002 PITCH TOTAL 1.000 ± .002 TOLERANCE NON CUMULATIVE
13 EQUAL SPACES AT .200 ± .002 PITCH TOTAL 2.600 ± .002 TOLERANCE NON-CUMULATIVE
.040 .060 X 45° ± 5° 2 PLACES BLEND WITH .12 R
4-40 UNC-3B SEE NOTE 6
.137 .139 DIA 84 HOLES
CUTOUT THRU
BREAK EDGE THIS SIDE .03
SEE VIEW A
.487 .491 (FROM GAGE POINT)
18.18
10.562
10.218
8.062
7.108
6.31
4.40
BREAK 2 EDGES THIS SIDE .03
.030 R MAX PERMISSIBLE ONE PLACE ONLY
.005 MAX ALLOWABLE STEP ABOVE SURFACE -E- STEP BELOW SURFACE NOT PERMITTED
.125 DIA X .19 DEEP 2 PLACES FOR MACHINING LOCATION
.062 X 45° TYP
.595 .575 DIM FOR STEP ONLY
SECTION F-F
SECTION L-L SCALE 2/1
SECTION G-G SCALE 2/1
PART NUMBER AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. ELECTRO-CHEMICAL ETCH .12 HIGH CHARACTERS, LOCATE CENTRALLY PER ND 1002019
SECTION E-E
.729 REF
16.7195 16.7165 (FROM GAGE POINT)
17.488 17.468

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MAT'L: ASTM NO. ZK60A-T5 MAGNESIUM ALLOY PER QQ-M-31A
3. REMOVE BURRS AND BREAK SHARP EDGES .005-.015
4. UNLESS OTHERWISE SPECIFIED, FINISH 125√
5. ALL RADII AND FILLETS TO BE $^{.14}_{.10}$ UNLESS OTHERWISE SPECIFIED
6. FINISH: ELECTROLESS NICKEL PLATE ALL OVER PER ND1002198 DIMENSIONS AND FINISHES APPLY AFTER PLATING. PLUG THREADED HOLES DURING PLATING SPECIFIED THICKNESS NOT REQUIRED IN ALL HOLES AS LONG AS PLATING IS CONTINUOUS THROUGH EACH HOLE
7. COAT THREADS OF FIND NO.1 & FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
8. MARK CHARACTERS BLACK PER ND1002019 EXCEPT SURACE D. AFTER PLATING ELECTRO CHEMICAL ETCH ALL CHARACTERS ON SURFACE D CENTRALIZE AS SHCWN
9. PAINT PER ND[illegible] USING 1010729-1. ALL SURFACES BETWEEN VIEWING PLANE AND END OF FRAME UNLESS OTHERWISE SPECIFIED ALL HOLES TO BE FREE OF PAINT
10. PAINT PER ND[illegible] USING 1010729-3 CHARACTER TO BE TYPE I PER ND 1002122, CENTRALIZE AS SHOWN


.186 .190 DIA
CSK 100° X .230 .210
.228 .226
5° 0' ± 0° 15'
SECTION A-A 2-PLACES
.248
2
.165 .169 DIA THRU
10-32UNF-2B THRU
82° ± 1° CSK, .189 .199 DIA
.005 DIA
SEE NOTE 6 & 7
SECTION B-B 2-PLACES
.272 DIA
CBORE .406 DIA X .142 DEEP
.281
.250 .246
.245
.015 R MAX PERMISSIBLE
SECTION C-C

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1000115-2	INSERT, THREADED, SELF-LOCKING	2
1	1021232-1	FRAME, TRAY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007142-011	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± 0° 30'
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 6

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
1059-407
DRAWN R. La [illegible] DATE 23 MAY 64
CHECKED [illegible] 3 JUN 64
APPROVAL [illegible] 6/18/64
APPROVAL [illegible] 8 Jan 64
[illegible] 7/8/64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME,
TRAY 2

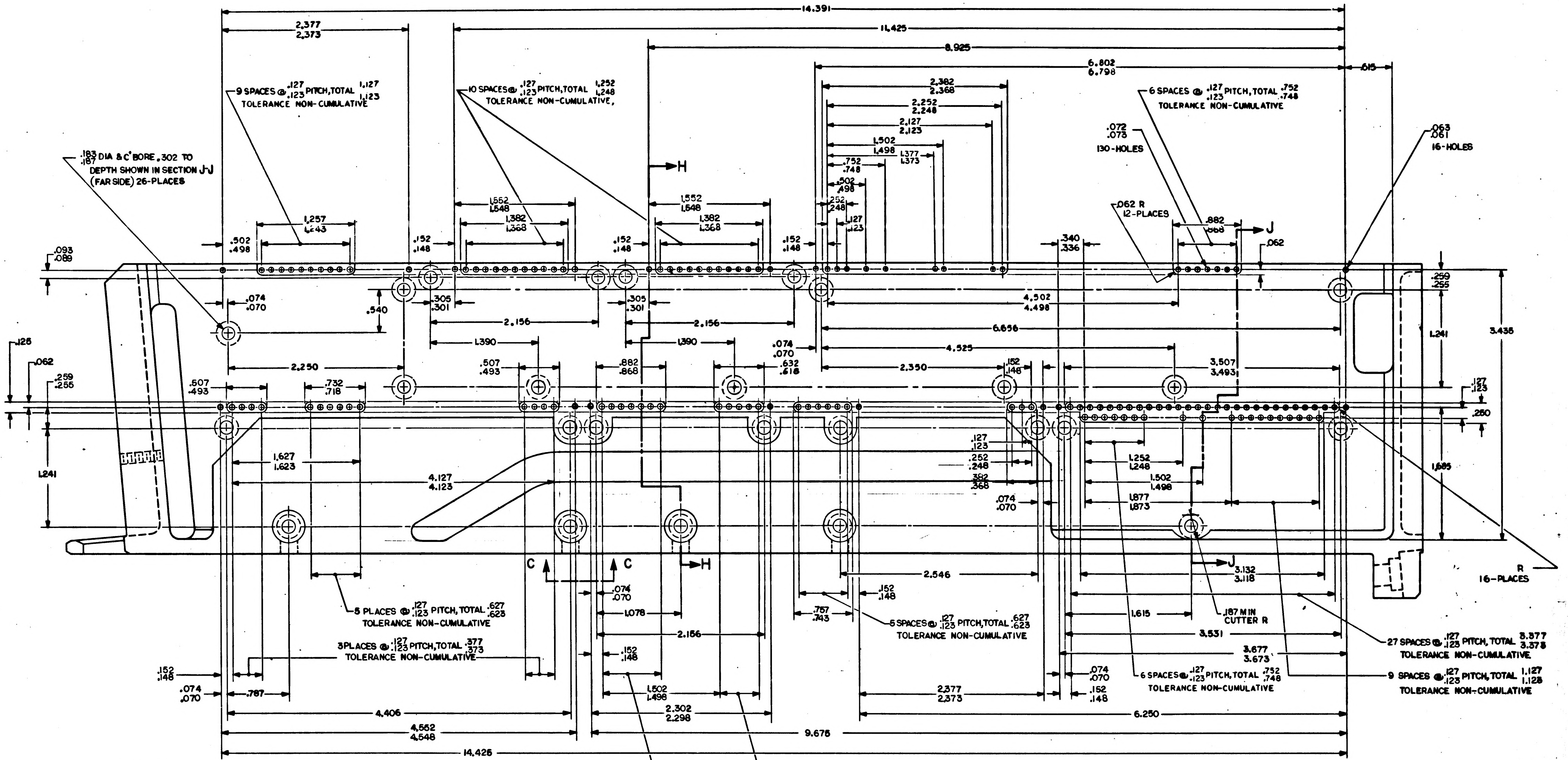
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021232
SCALE 1/1
WT
SHEET 1 OF 3

1021232

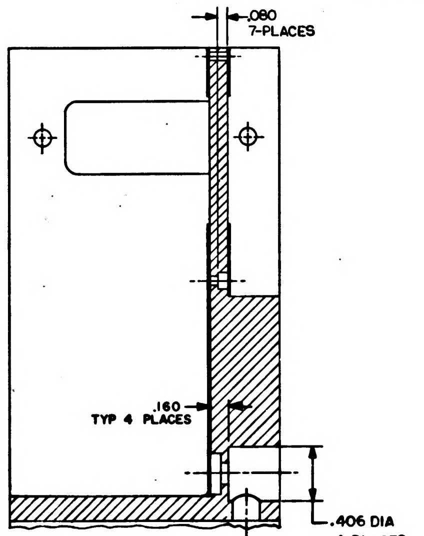
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 10907

SYM	DESCRIPTION	DATE	APPROVAL

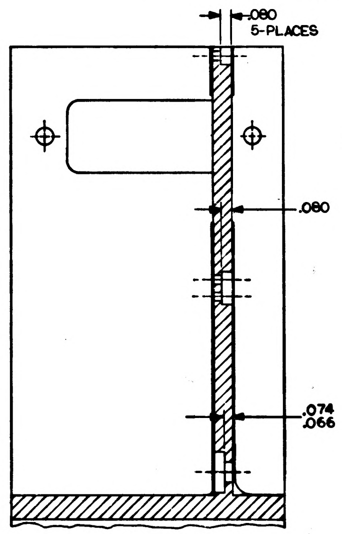


14.391
11.425
8.925
6.802 / 6.798
2.377 / 2.373
2.382 / 2.368
2.252 / 2.248
2.127 / 2.123
1.502 / 1.498
1.377 / 1.373
.752 / .748
.502 / .498
.252 / .248
.127 / .123
.615
9 SPACES @ .127/.123 PITCH, TOTAL 1.127/1.123 TOLERANCE NON-CUMULATIVE
10 SPACES @ .127/.123 PITCH, TOTAL 1.252/1.248 TOLERANCE NON-CUMULATIVE
6 SPACES @ .127/.123 PITCH, TOTAL .752/.748 TOLERANCE NON-CUMULATIVE
.183/.167 DIA & C'BORE .302 TO DEPTH SHOWN IN SECTION J-J (FAR SIDE) 26-PLACES
.072/.073 130-HOLES
.063/.061 16-HOLES
.062 R 12-PLACES
H
J
1.257/1.243
1.552/1.548
1.382/1.368
.882/.868
.340/.336
.152/.148
.502/.498
.093/.089
.062
.259/.255
.074/.070
.305/.301
.540
2.156
1.390
2.250
4.502/4.498
6.656
4.525
2.350
3.507/3.493
.507/.493
.732/.718
.632/.618
.125
1.241
3.438
.250
1.665
1.627/1.623
4.127/4.123
.127/.123
.252/.248
.382/.368
1.252/1.248
1.502/1.498
1.877/1.873
C
2.546
3.132/3.118
1.615
3.531
3.677/3.673
.187 MIN CUTTER R
R 16-PLACES
5 PLACES @ .127/.123 PITCH, TOTAL .627/.623 TOLERANCE NON-CUMULATIVE
3 PLACES @ .127/.123 PITCH, TOTAL .377/.373 TOLERANCE NON-CUMULATIVE
5 SPACES @ .127/.123 PITCH, TOTAL .627/.623 TOLERANCE NON-CUMULATIVE
6 SPACES @ .127/.123 PITCH, TOTAL .752/.748 TOLERANCE NON-CUMULATIVE
27 SPACES @ .127/.123 PITCH, TOTAL 3.377/3.373 TOLERANCE NON-CUMULATIVE
9 SPACES @ .127/.123 PITCH, TOTAL 1.127/1.123 TOLERANCE NON-CUMULATIVE
.767/.743
1.078
2.156
.787
4.406
4.552/4.548
14.425
2.302/2.298
9.676
2.377/2.373
6.250
4 SPACES @ .127/.123 PITCH, TOTAL .502/.498 TOLERANCE NON-CUMULATIVE
6 SPACES @ .127/.123 PITCH, TOTAL .752/.748 TOLERANCE NON-CUMULATIVE



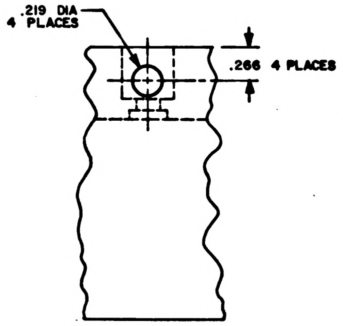
.080 7-PLACES
.160 TYP 4 PLACES
.406 DIA 4-PLACES

SECTION H-H



.080 5-PLACES
.080
.074/.066

SECTION J-J



.219 DIA 4 PLACES
.266 4 PLACES

PARTIAL VIEW C-C

VIEW B-B
SCALE: 2:1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± ~~#~~ DECIMALS XX ± .02 XXX ± .005 ANGLES ± 0°30'
DO NOT SCALE THIS DRAWING
MATERIAL ~~#~~
HEAT TREATMENT ~~#~~
FINAL FINISH ~~#~~

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. L. Dus DATE
CHECKED 3 JUN 64
APPROVAL 6/11/64
APPROVAL 8 JUN 64
D. G. [illegible] 7/1/64
NASA APPROVAL 7/17/64
MIT APPROVAL 14 [illegible] 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

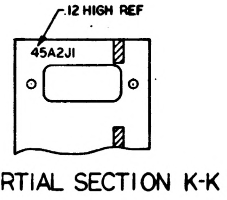
FRAME,
TRAY 2

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1021232
SCALE 2:1 WT SHEET 2 OF 3

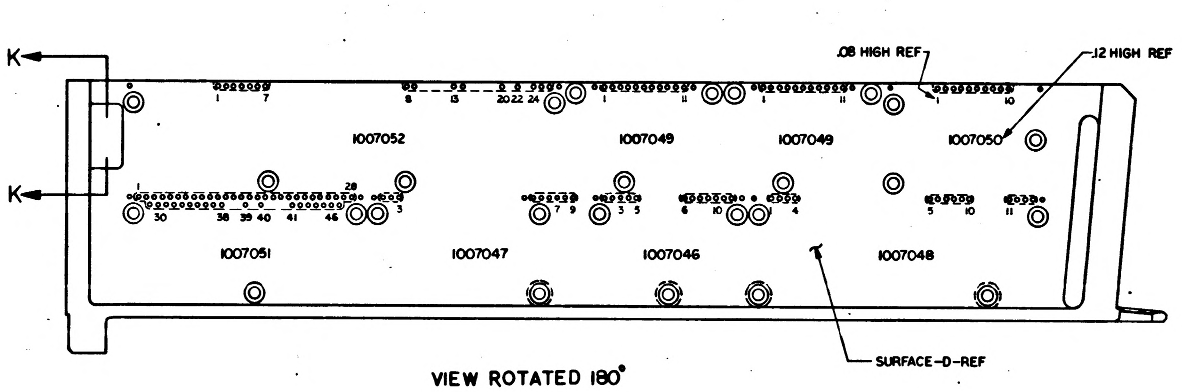
1021232

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

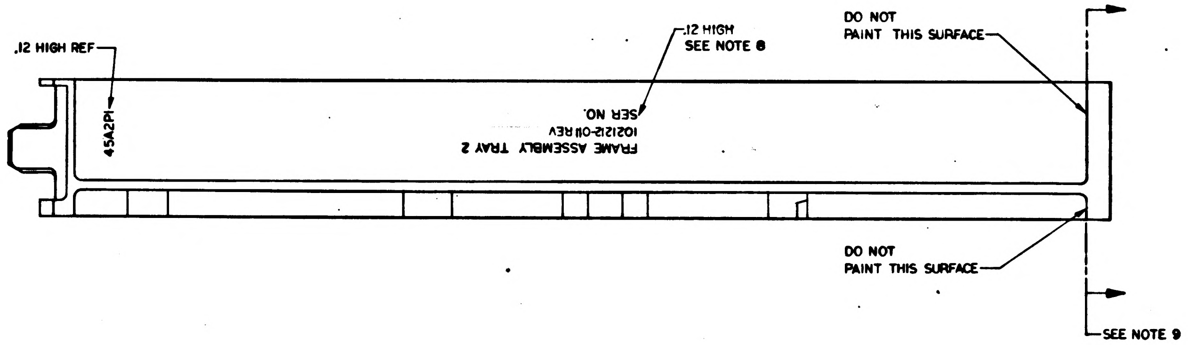
REVISIONS TDCR 10907			
SYM	DESCRIPTION	DATE	APPROVAL

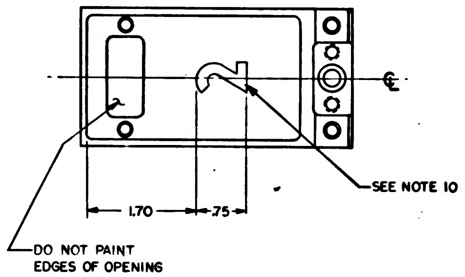

.12 HIGH REF
45A2J1

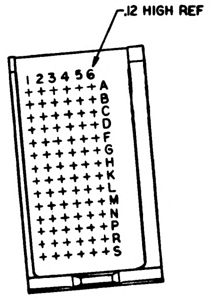
PARTIAL SECTION K-K

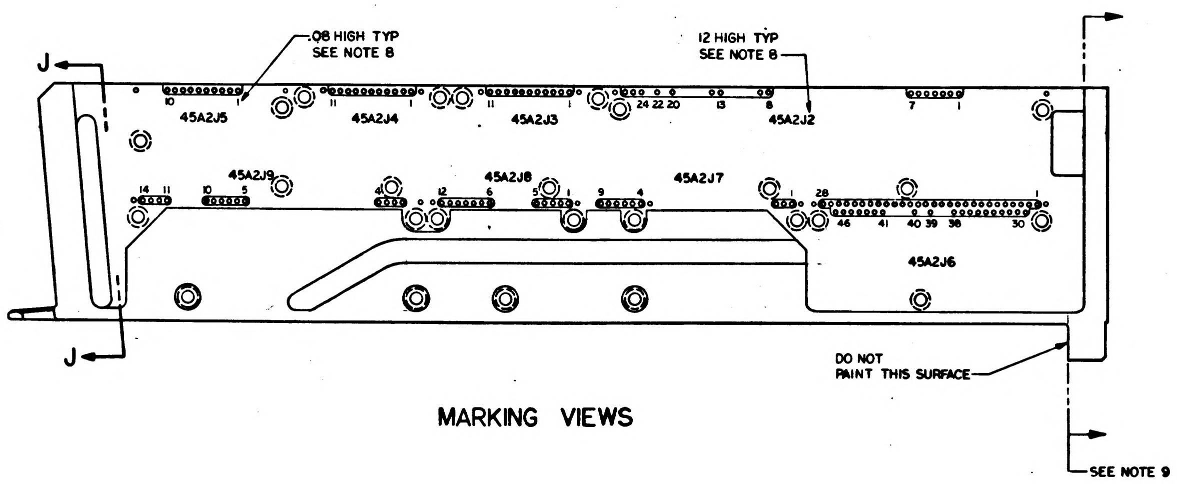

K
K
.08 HIGH REF
.12 HIGH REF
1007052
1007049
1007049
1007050
1007051
1007047
1007046
1007048
1 7
8 13
20 22 24
1 11 10
1 28
30 38 39 40 41 46 3
7 9
3 5
6 10 4
5 10
11
SURFACE-D-REF

VIEW ROTATED 180°

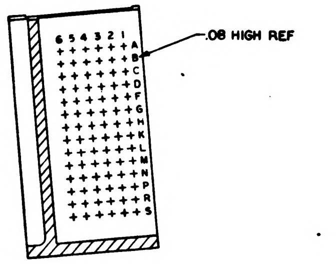

.12 HIGH REF
.12 HIGH
SEE NOTE 8
DO NOT PAINT THIS SURFACE
45A2P1
FRAME ASSEMBLY TRAY 2
1021212-01 REV
SER NO.
DO NOT PAINT THIS SURFACE
SEE NOTE 9


℄
1.70
.75
SEE NOTE 10
DO NOT PAINT EDGES OF OPENING


.12 HIGH REF
1 2 3 4 5 6
A B C D E F G H K L M N P R S


J
J
.08 HIGH TYP
SEE NOTE 8
.12 HIGH TYP
SEE NOTE 8
45A2J5
45A2J4
45A2J3
45A2J2
45A2J9
45A2J8
45A2J7
45A2J6
10 1
11
24 22 20
13
8
7 1
14 11
10 5
12
9 4
1 28
46 41 40 39 38 30
DO NOT PAINT THIS SURFACE
SEE NOTE 9

MARKING VIEWS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6 5 4 3 2 1
A B C D E F G H K L M N P R S

SECTION J-J

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX± .02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
CONTRACT NAS 9-4065
DRAWN R. Lu... DATE ...64
CHECKED ... 3 JUN 64
APPROVAL ... 6/11/64
APPROVAL ... 8 JUN 64
D. G. ... 7/8/64
NASA APPROVAL ... 7/14/64
MIT APPROVAL ... 14 July 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRAME,
TRAY 2

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1021232
SCALE 1/1
WT
SHEET 3 OF 3

1021232

APPLICATION

NEXT ASSY	USED ON
1023014-011	

REVISIONS 17881

SYM	DESCRIPTION	DATE	APPROVAL

REV STATUS OF SHEETS								
REV	+	+	+	+	+	+	+	+
SHEET	1	2	3	4	5	6	7	8

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS A

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN RWJ 3 MAR 65
DATE
CHECKED C. 11 MAR 65
APPROVAL 11 MAR 65
APPROVAL 3/22/65
NASA APPROVAL 3-24-65
MIT APPROVAL
CONTRACT NAS 9-497

CODE IDENT NO.
SIZE A
1021254
REV +
SCALE --
SHEET 1 OF 8

WIRING HARNESS A 1021254 +

GENERAL NOTES

NOTE NUMBER	DESCRIPTION
1	DELETED
2	ASSEMBLE PER ND1002032
3	INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
4	LACE HARNESS USING ITEM 5.
5	GRID IS SHOWN FOR DIMENSIONING PURPOSES.
6	GRID MODULE IS 1 INCH BASIC.
7	UNLESS OTHERWISE SPECIFIED - FEATURE CENTERLINES AT TRUE POSITION WITHIN + OR - .25 INCH RELATIVE TO GRID. ENDS OF LEADS OR ACCESSORIES AT TRUE POSITION WITHIN + OR - .12 INCH RELATIVE TO GRID. TRUE POSITION DIMENSIONS ARE REGARDLESS OF FEATURE SIZE.
8	VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
9	THE SUFFIX LETTER OF A LEAD IDENTIFICATION NUMBER INDICATES LEAD SHIELDING, COLOR, OR MARKING. R - RED Y - YELLOW
10	SOLDER PER ND1002071
11	IDENTIFY USING DWG. NO. AND REVISION LETTER PER ND1002019.
12	ENCAPSULATE THE WIRED SIDE OF ITEMS 2 AND 3, USING ITEM 6 PER ND1002236. LEAD INSULATION SHALL EXTEND INTO THE ENCAPSULATION .18 PLUS OR MINUS .06 INCHES EXCEPT THE LEADS AT ITEM 3 SHALL BE POTTED FLUSH WITH THE POTTING DAM.
13	ASSEMBLE CONTACTS IN ALL CONNECTOR GROMMET HOLES.

MANNED SPACECRAFT CENTER HOUSTON, TEXAS | SIZE A | 1021254
SCALE-NONE | REV LTR + | SHEET 2 OF 8

MIL 2084 4-63

WIRING HARNESS A 1021254 +

GENERAL NOTES

NOTE NUMBER	DESCRIPTION
14	MARK LEAD IDENTIFICATION PER ND1002019 OMITTING ALL SUFFIX LETTERS

TOLERANCE CHART, UNLESS OTHERWISE SPECIFIED ---

APPLICABLE LENGTH FOR STRIP WIRE, STRIP JACKET, CUT WIRE OR CUT SHIELD.	TOLERANCE STRIP WIRE	TOLERANCE STRIP JACKET	TOLERANCE CUT WIRE	TOLERANCE CUT SHIELD
UNDER 1 INCH	+.03-.00	+.06-.06	+.06-.06	+.06-.06
1 INCH TO 6 INCHES	+.06-.00	+.25-.25	+.25-.25	+.25-.25
6 INCHES TO 6 FEET		+.50-.50	+.50-.50	+.50-.50

MANNED SPACECRAFT CENTER HOUSTON, TEXAS | SIZE A | 1021254
SCALE-NONE | REV LTR + | SHEET 3 OF 8

MIL 2084 4-63

WIRING HARNESS A 1021254 +

LIST OF MATERIALS

SEE NOTE NUMBER	ITEM	QTY	PART NO.	DESCRIPTION
8	1	1	1010789-001	WIRE, [redacted] [redacted], 24AWG [redacted]YEL 15 FT TOTAL LENGTH
8	2	1	1010809-002	CONNECTOR, PLUG, ELECTRICAL
8	3	1	1010825-008	CONNECTOR, PLUG, ELECTRICAL
8	4	108	1010738-005	CONTACT, PIN
8	5	AR	1012507-001	TAPE, LACING AND TYING
8	6	AR	1012503	COMPOUND, POLYURETHANE
8	7	28	1010770-002	CONTACT, SOCKET
8	8	54	1010911-035	INSULATION, SLEEVING
8	9	1	1010812- 3	Seal, CONNECTOR
8	10	1	1010789-003	WIRE, TWISTED PAIR, 24 AWG RED YEL 10 IN TOTAL LENGTH

MANNED SPACECRAFT CENTER HOUSTON, TEXAS | SIZE A | 1021254
SCALE-NONE | REV LTR + | SHEET 4 OF 8

MIL 2084 4-63

WIRING HARNESS A 1021254

LEAD IDENT	WIRE MATL ITEM	LEAD LG	CIRCUIT PT FROM (A) TO (B)	TERM. AREA NO.	JKT STRIP LG	SHLD STRIP LG	LEAD CUT LG	INS STRIP LG	TIN	NOTE ONE, FIG	ACCESSORY ITEMS	REMARKS
A 1	1		P2-51 J1-A1	1 2					NO NO		4,8 7,8	
A 2	1		P2-52 J1-A2	1 2					NO NO		4,8 7,8	
A 3	1		P2-71 J1-B1	1 2					NO NO		4,8 7,8	
A 4	1		P2-82 J1-B2	1 2					NO NO		4,8 7,8	
A 5	1		P2-60 J1-C1	1 2					NO NO		4,8 7,8	
A 6	1		P2-61 J1-C2	1 2					NO NO		4,8 7,8	
A 7	1		P2-72 J1-D1	1 2					NO NO		4,8 7,8	
A 8	1		P2-83 J1-D2	1 2					NO NO		4,8 7,8	

MANNED SPACECRAFT CENTER HOUSTON, TEXAS | SIZE A | 1021254

SCALE-NONE | REV LTR + | SHEET 5 OF 8

MIL 2084 4-63

WIRING HARNESS A 1021254

LEAD IDENT	WIRE MATL ITEM	LEAD LG	CIRCUIT PT FROM (A) TO (B)	TERM. AREA NO.	JKT STRIP LG	SHLD STRIP LG	LEAD CUT LG	INS STRIP LG	TIN	NOTE ONE, FIG	ACCESSORY ITEMS	REMARKS
A 9	1		P2-73 J1-E1	1 2					NO NO		4,8 7,8	
A 10	1		P2-84 J1-E2	1 2					NO NO		4,8 7,8	
A 11	1		P2-50 J1-F1	1 2					NO NO		4,8 7,8	
A 12	1		P2-70 J1-F2	1 2					NO NO		4,8 7,8	
A 13	10										8 8	
A 13R			P2-18 J1-H1	1 2					NO NO		4,8 7,8	
A 13Y			P2-19 J1-H2	1 2					NO NO		4,8 7,8	
A 14	1		P2-62 J1-J1	1 2					NO NO		4,8 7,8	
A 15	1		P2-63 J1-J2	1 2					NO NO		4,8 7,8	

MANNED SPACECRAFT CENTER HOUSTON, TEXAS | SIZE A | 1021254

SCALE-NONE | REV LTR + | SHEET 6 OF 8

MIL 2084 4-63

WIRING HARNESS A 1021254

LEAD IDENT	WIRE MATL ITEM	LEAD LG	CIRCUIT PT FROM (A) TO (B)	TERM. AREA NO.	JKT STRIP LG	SHLD STRIP LG	LEAD CUT LG	INS STRIP LG	TIN	NOTE ONE, FIG	ACCESSORY ITEMS	REMARKS
A 16	1		P2-17 J2-M2	1 2					NO NO		8,4 8,7	
A 17	1		P2-41 J2-K1	1 2					NO		4,8 7,8	
A 18	1		P2-30 J2-K2	1 2					NO NO		4,8 7,8	
A 19	1		P2-28 J2-G2	1 2					NO NO		8,4 8,7	
A 20	1		P2-42 J2-L1	1 2					NO NO		4,8 7,8	
A 21	1		P2-31 J2-L2	1 2					NO NO		4,8 7,8	
A 22	1		P2-40 J1-G1	1 2					NO NO		8,4 8,7	
A 23	1		P2-53 J2-N1	1 2					NO NO		4,8 7,8	
A 24	1		P2-54 J2-N2	1 2					NO NO		4,8 7,8	
A 25	1		P2-15 J1-M1	1 2					NO NO		8,4 8,7	
A 26	1		P2-43 J2-P1	1 2					NO NO		4,8 7,8	
A 27	1		P2-32 J2-P2	1 2					NO NO		4,8 7,8	

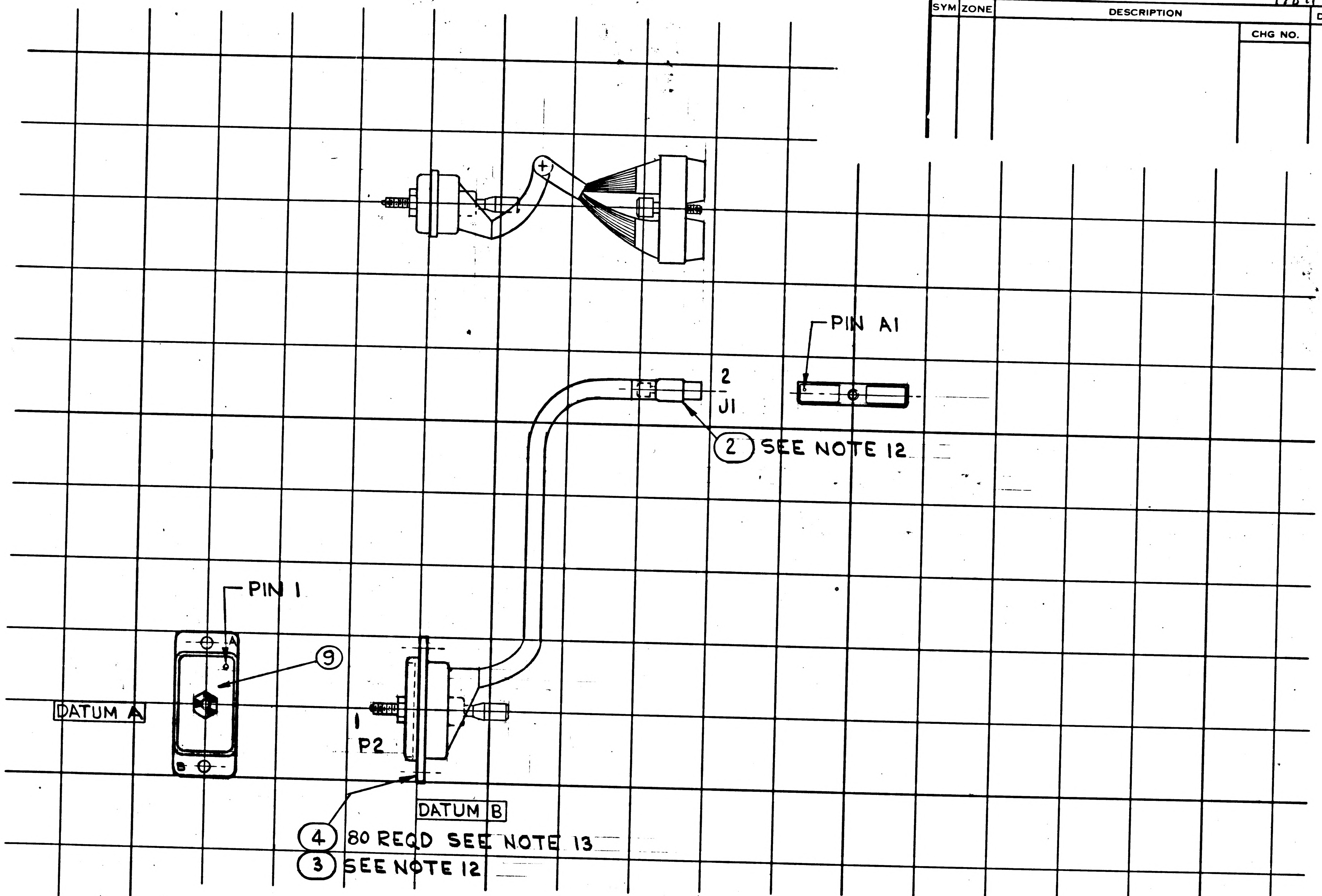
MANNED SPACECRAFT CENTER HOUSTON, TEXAS | SIZE A | 1021254

SCALE-NONE | REV LTR + | SHEET 7 OF 8

MIL 2084 4-63

1021254

REVISIONS					17891
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.



PIN A1
2
J1
② SEE NOTE 12
PIN 1
⑨
DATUM A
1
P2
DATUM B
④ 80 REQD SEE NOTE 13
③ SEE NOTE 12
D
C
B
A
4
3
2
1

1023014-011	1023014-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN RW Haenel DATE 3 MAR 65
CHECKED C. Piojda 11 MAR 65
APPROVAL F. Paulson 11 mar 65
APPROVAL QCW J. Nevin 3/22/65
NASA APPROVAL W J Rhine 3-29-65
MIT APPROVAL W Kupfer 29 Mar 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS A

CODE IDENT NO.
SIZE C
1021254
SCALE —
SHEET 8 OF 8

MIL 1077C—P

REVISIONS					
ZONE	LTR	DESCRIPTION 23240	CHG. NO.	DATE	APPROVED
	A	REVISED PER TDRR 25700		8 FEB 66	HTO / CP

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

		8	8		4	1001488-45	SCREW, SOC. HD CAP, SELF LOCKING
		1	–		3	1021272-021	ANNUNCIATOR PANEL & SUPPORT ASSY
		–	1		2	1021272-011	ANNUNCIATOR PANEL & SUPPORT ASSY
		1	1		1	1021314-011	CASE ASSY, EYEPIECE STOWAGE
		021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS ± — ANGLES ± —	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWG. NO. CONTRACT	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN Janowiak DATE 15 OCT 65 CHECKED Ed Foster 15 OCT 65 APPROVAL J. A. Hann 15 Oct 65 APPROVAL R. W. Bras 19 Oct 65	ANNUNCIATOR PANEL AND EYEPIECE STOWAGE ASSEMBLY
MATERIAL —	NOT REQUIRED PER LETTER NASA APPROVAL	CODE IDENT NO. 80230 SIZE C 1021255
CONTRACT NAS 9-497	MIT APPROVAL 19 Oct 65	SCALE — SHEET 1 OF 1

APOLLO G&N Specification
PS1021255 REV A
Original Issue Date: 9Mar66
Release Authority: TDRR 27015
Class A Release
CODE IDENT NO. 80230

PROCUREMENT SPECIFICATION

PRODUCT CONFIGURATION AND ACCEPTANCE TEST SPECIFICATION

ANNUNCIATOR PANEL AND EYEPIECE STOWAGE ASSEMBLY

DRAWING NO. 1021255

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
7/6/66	A.	30128	6	MGM	---

This specification consists of page 1 to 8 inclusive.

APPROVALS	A. C. METZGER NASA/MSC	3/9/66 MIT/IL	ACSP

4.3.2 Workmanship-Vibration. With the assembly mounted in the same manner which it mounts in the spacecraft, it shall be subjected to vibration along each of the spacecraft axes. The vibration shall be simple harmonic motion swept from 10 to 2000 cps at a rate of 1 octave/15 seconds. The magnitude of vibration shall be 1.5g rms limited to a 0.15 inch pp constant displacement from 10 cps to the crossover frequency.

The assembly shall be tested in accordance with 4.3.2.1 and 4.3.2.2 during the 10 to 2000 cps vibration.

After vibration the assembly shall be visually examined as specified in 4.3.1 and tested in accordance with 4.3.3 through 4.3.6.

4.3.2.1 Indicator-Caution/Warning. With voltage in accordance with Table I applied to P1, the lamps shall be illuminated without flickering during vibration as determined by visual observation.

4.3.2.2 Continuity. Continuity shall exist between the pins of connector P1 and connectors J1, J2 and J3 as defined in Table II. The resistance measurement is not required during vibration.

4.3.3 Continuity and DC Resistance. The dc resistance between the pins listed in Table II shall be as specified therein, when measured in accordance with Method 303 of Standard MIL-STD-202.

4.3.4 Insulation Resistance. The resistance between the pins of connector P1 and the chassis of the Annunciator Panel Assembly shall be as specified in 3.1.3 when measured in accordance with Method 302 of Standard MIL-STD-202. The megohmmeter used shall have an output of 100±10 vdc, limited to a short circuit current of 6 μa.

4.3.5 Maximum Weight. The assembly shall be weighed to the nearest hundreth pound.

4.3.6 Indicators-Caution/Warning. The indicators shall be illuminated in accordance with Table I.

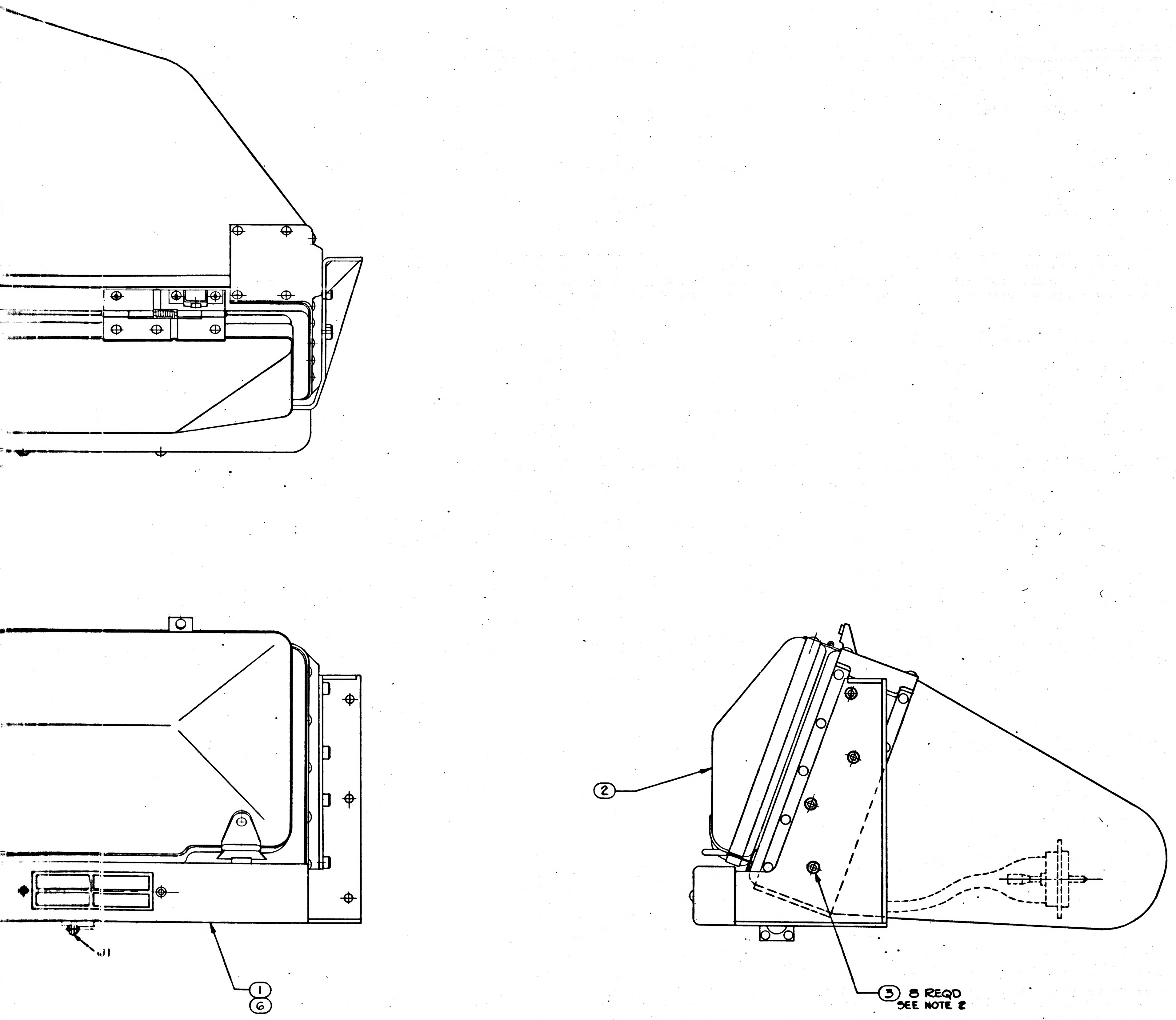
5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND1002214.

6. NOTES. None.

RO:efo

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
	B	REPLACES REV A WITH CHANGE PER TDRR 20815		22-FEB-66	



SEE NOTE 4

		X	–		8	1021317	SCHEMATIC DIAGRAM, ELECT.
		–	X		7	1021318	SCHEMATIC DIAGRAM, ELECT.
		1	–		6	1021272-021	ANNUNCIATOR PANEL & SUPPORT ASSY
		1	–		5	1004260-186	NAMEPLATE
		–	1		4	1004260-185	NAMEPLATE
		8	8		3	1001488-45	SCREW-HEX SOC. HD.-SELF LOCKING
		1	1		2	1021314-0[illegible]	CASE, EYEPIECE STOWAGE (INSP ASSY
		–	1		1	1021272-011	ANNUNCIATOR PANEL & SUPPORT ASSY
		021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

C. REPLACES REV B, WITH CHANGE

MASTER

8102623	8102630	011
8102632	8102633	021
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN ORZEL DATE 13-OCT-65
CHECKED ED. FOSTER 1FEB66
APPROVAL E. LEMKUIL 1FEB66
CONTRACT NAS 9-497
R. H. Bass 3/8/66
NASA APPROVAL A. C. Metzger
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

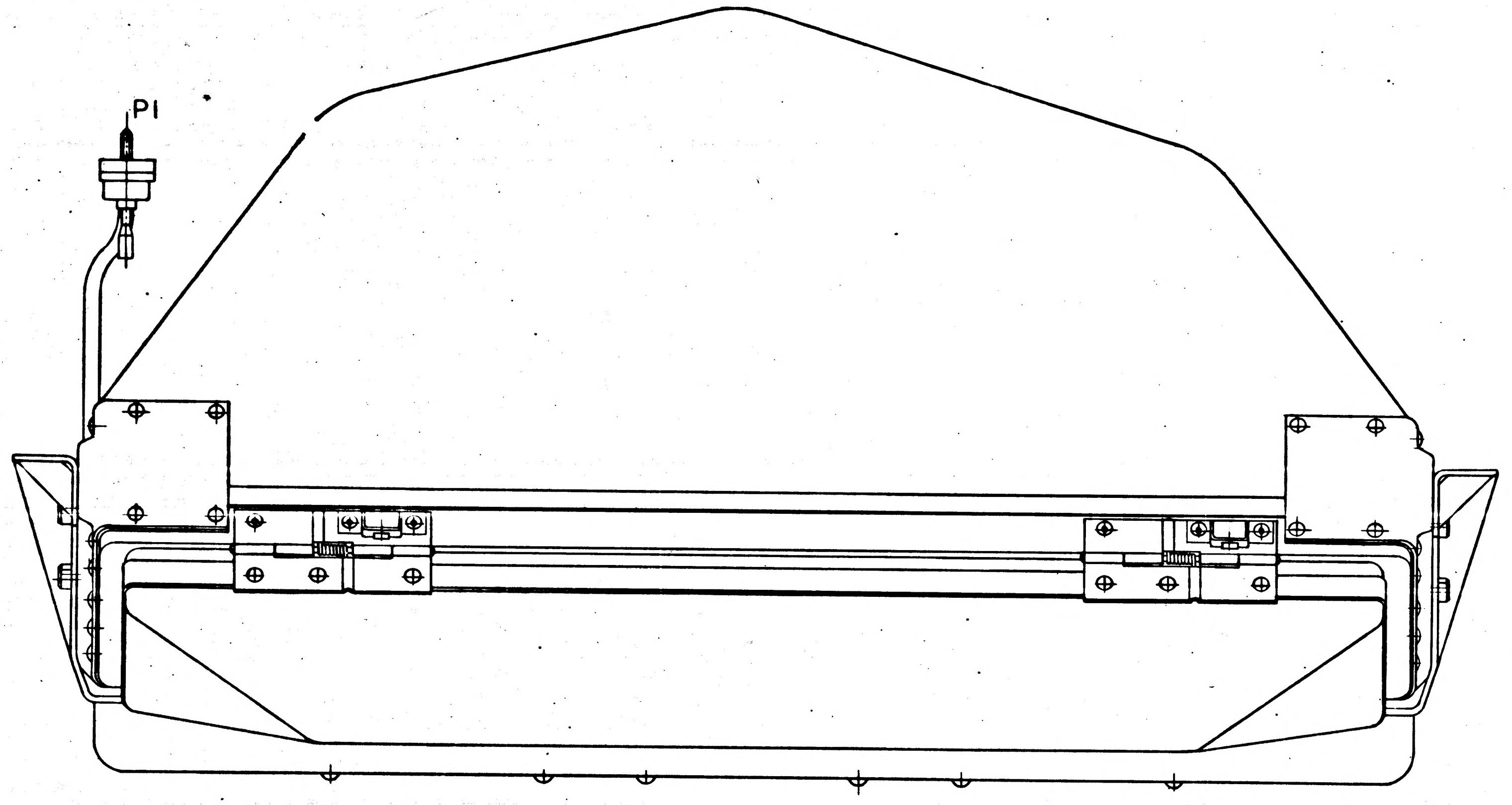
STOWAGE UNIT
EYEPIECE

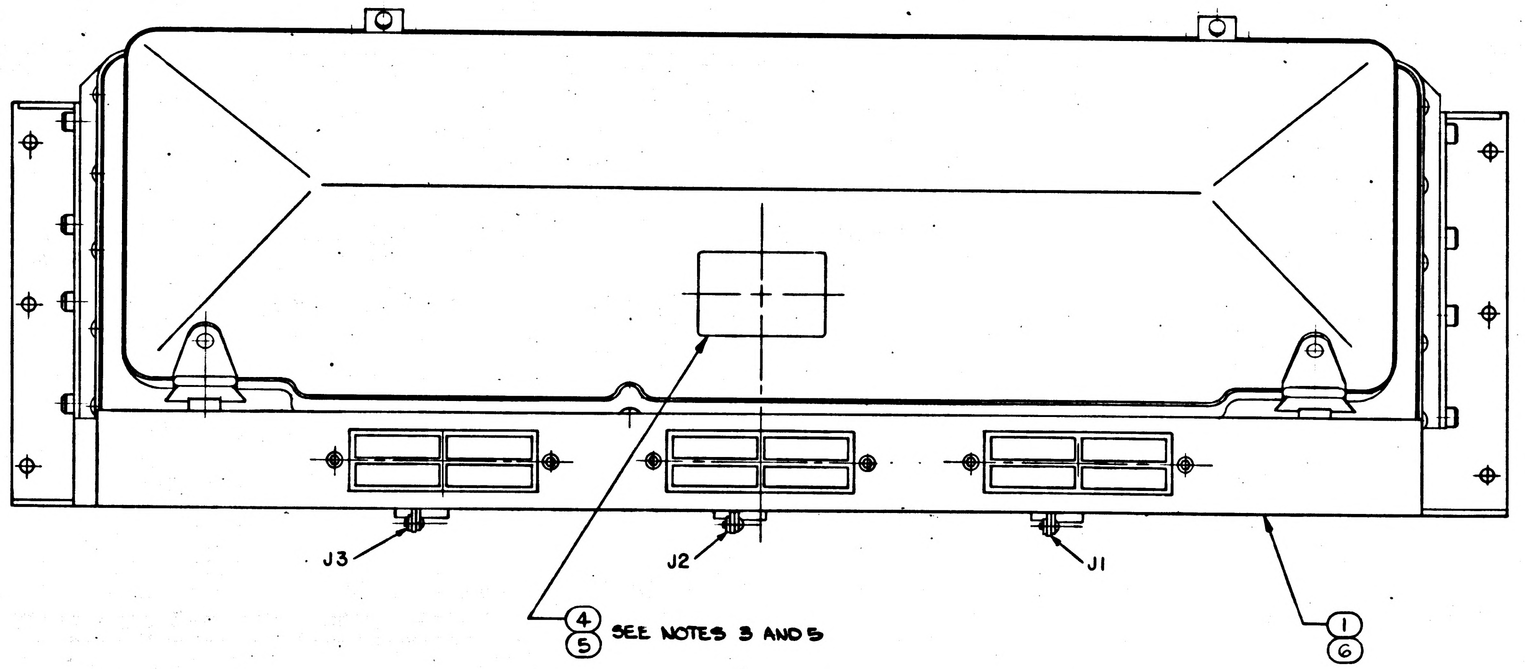
SIZE J2
CODE IDENT NO. 80230
1021255
SCALE FULL
SHEET 1 OF 1

1021255 REV LTR B SH 1 OF 1

NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. TORQUE ③ TO 33-37 POUND/INCHES.
3. APPLY ④ OR ⑤ PER ND1002219, METHOD II. LOCATE AS SHOWN.
4. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
5. MARK APPLICABLE CONTRACT NUMBER AND SERIAL NUMBER ON ④ OR ⑤ IN ACCORDANCE WITH ND1002023. LETTERS AND NUMERALS TO BE .078 HIGH .





24

1021255 REV LTR B SH 1

APOLLO G&N Specification
PS1021255 REV B
Original Issue Date: 9Mar66
Release Authority: TDRR 27015
Class A Release
CODE IDENT NO. 80230

PROCUREMENT SPECIFICATION

PRODUCT CONFIGURATION AND ACCEPTANCE TEST SPECIFICATION

ANNUNCIATOR PANEL AND EYEPIECE STOWAGE ASSEMBLY

DRAWING NO. 1021255

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
7/6/66	A	30128	6	MGM	---
8/18/66	B	30718	2	EA	--

This specification consists of page 1 to 6 inclusive.

APPROVALS	A. C. METZGE NASA/MSC	3/9/66 R. B. 3/9/66 MIT/IL	E. Lamkin ACSP

1. SCOPE

1.1 PURPOSE. This specification establishes the detail requirements for complete identification and acceptance of the Annunciator Panel and Eyepiece Stowage Assembly Part Number 1021255-011 or 1021255-031 hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, Military Standards and Specifications shall be the issue in effect on the date of request for proposal or invitation to bid.

SPECIFICATIONS

APOLLO G&N

ND1002214	General Specification for Preservation, Packaging, Packing and Container Marking of APOLLO Guidance and Navigation Major Assemblies, Assemblies, Subassemblies, Parts and Associated Ground Support Equipment

STANDARDS

Military

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

DRAWINGS

APOLLO G&N

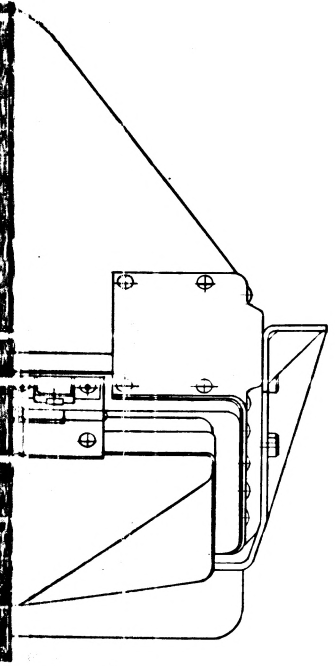
1021255	Annunciator Panel and Eyepiece Stowage Assembly

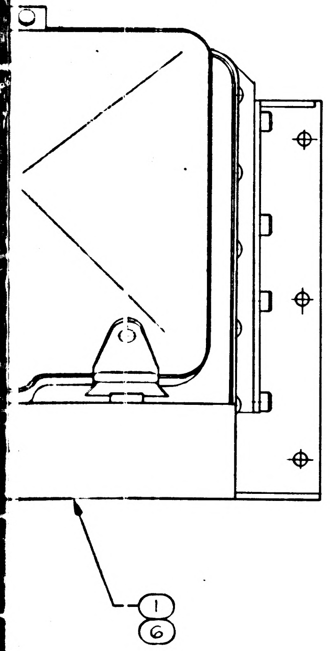
(Copies of specifications, standards, drawings, bulletins, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

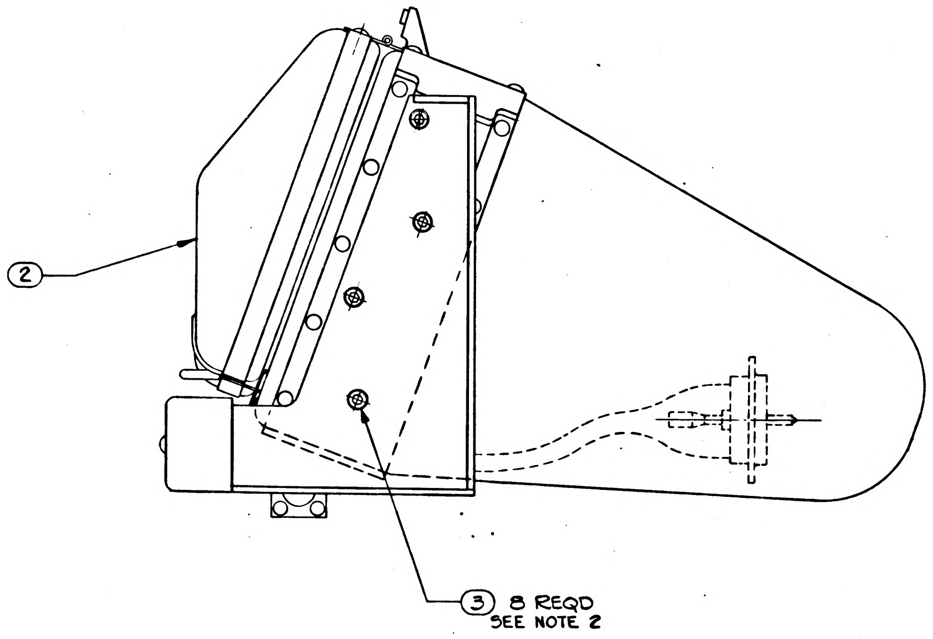
2.2 CONFLICTING REQUIREMENTS. In the event of a conflict between requirements, the following order of precedence shall apply. The contractor shall also notify MIT/IL APOLLO Management of the conflict.

a. The contract.
b. This specification.
c. Documents listed in this section.

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
	B	REPLACES REV A WITH CHANGE PER TDRR 26895		22-FEB-66	A.J.F. / W. P7
	C	REVISED PER TDRR 27397		31-MAR-66	B.







C. REPLACES REV B, WITH CHANGE

SEE NOTE 4

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
		021	011				
		X	–		8	1021317	SCHEMATIC DIAGRAM, ELECT.
		–	X		7	1021318	SCHEMATIC DIAGRAM, ELECT.
		1	–		6	1021272-021	ANNUNCIATOR PANEL & SUPPORT ASSY
		1	–		5	1004260-186	NAMEPLATE
		–	1		4	1004260-185	NAMEPLATE
		8	8		3	1001488-45	SCREW-HEX SOC.HD.-SELF LOCKING
		1	1		2	1021314-011	CASE, EYEPIECE STOWAGE (INSEP ASSY
		–	1		1	1021272-011	ANNUNCIATOR PANEL & SUPPORT ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
8102623	8102630	011
8102632	8102633	021

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — –
3 PLACE DECIMALS + — –
ANGLES + — –
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN ORZEL DATE 13-OCT-65
CHECKED ED. FOSTER 1FEB66
APPROVAL E. LEMKUIL 1FEB66
CONTRACT NAS 9-497
R. H. Bras 3/8/66
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STOWAGE UNIT
EYEPIECE

SIZE J2
CODE IDENT NO. 80230
1021255
SCALE FULL
SHEET 1 OF 1

1021255 C

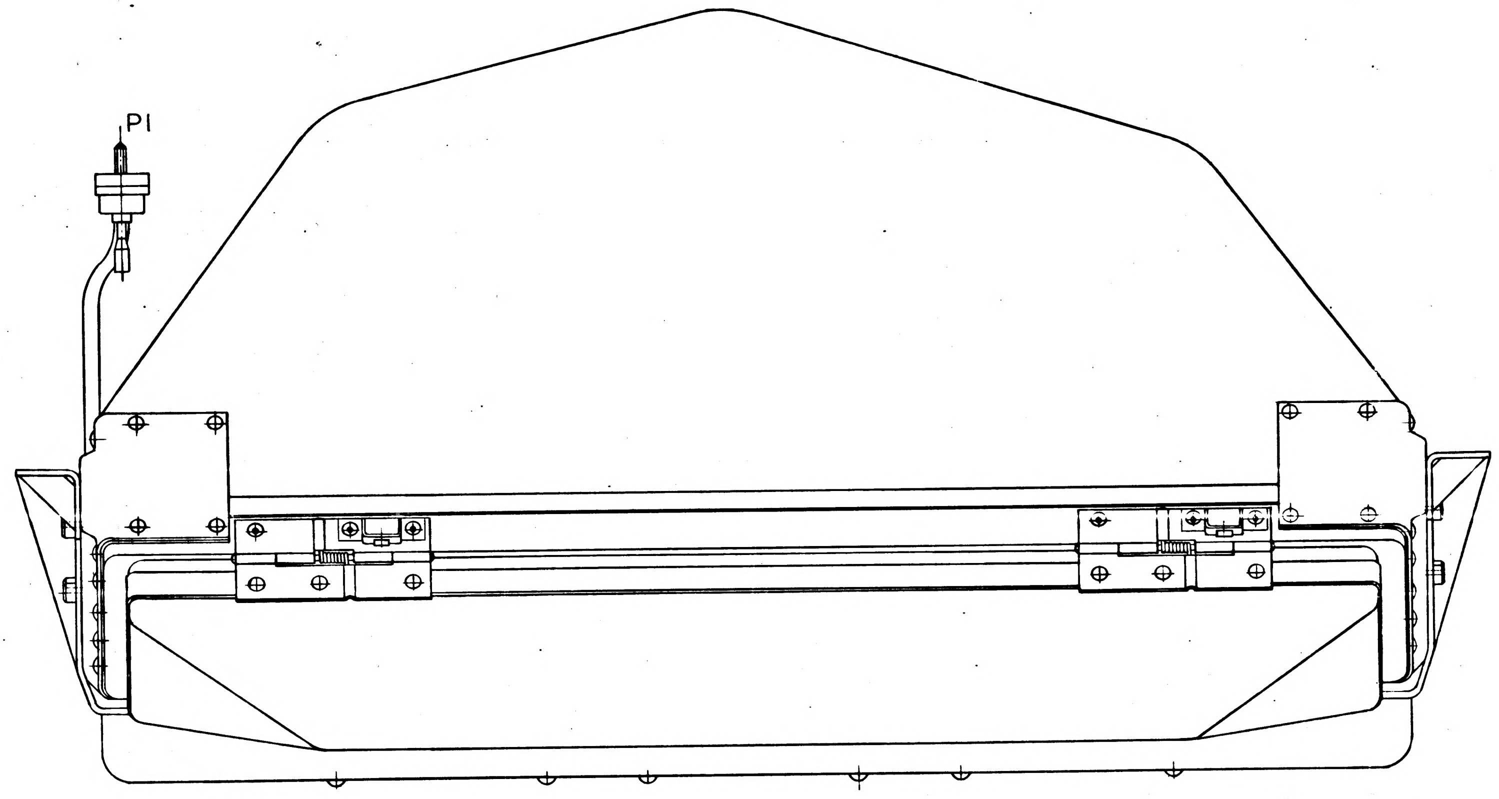
1021255 REV C SH 1 OF 1

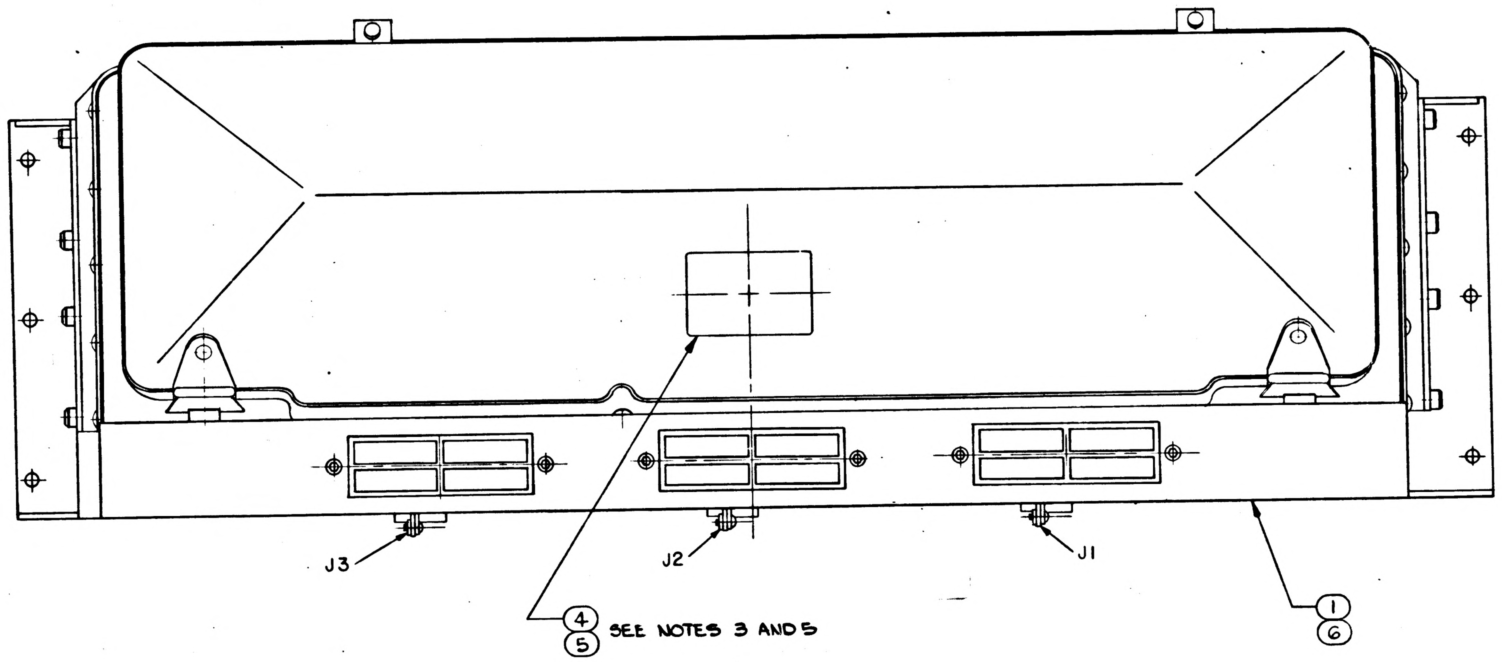
2+

2/1021255

NOTES :

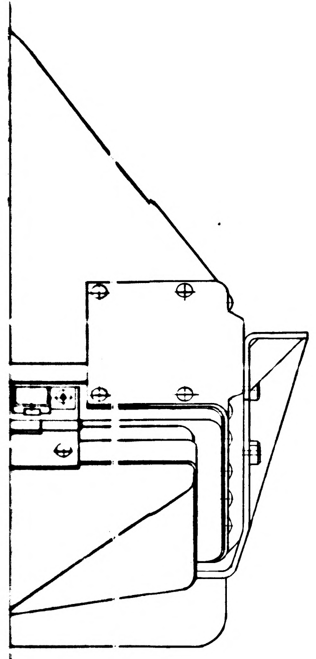
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. TORQUE ③ TO 33-37 POUND/INCHES.
3. APPLY ④ OR ⑤ PER ND1002219, METHOD II. LOCATE AS SHOWN.
4. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
5. MARK APPLICABLE CONTRACT NUMBER AND SERIAL NUMBER ON ④ OR ⑤ IN ACCORDANCE WITH ND1002023. LETTERS AND NUMERALS TO BE .078 HIGH.
6. INSPECT AND TEST PER REQUIREMENTS OF PROCUREMENT SPECIFICATIONS AS FOLLOWS:
   P/N 1021255-011 PER PS 1021255.
   P/N 1021255-021 PER PS 2016153.

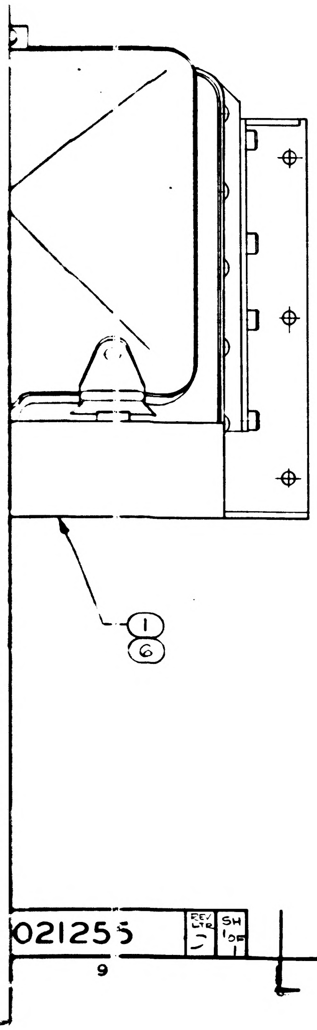


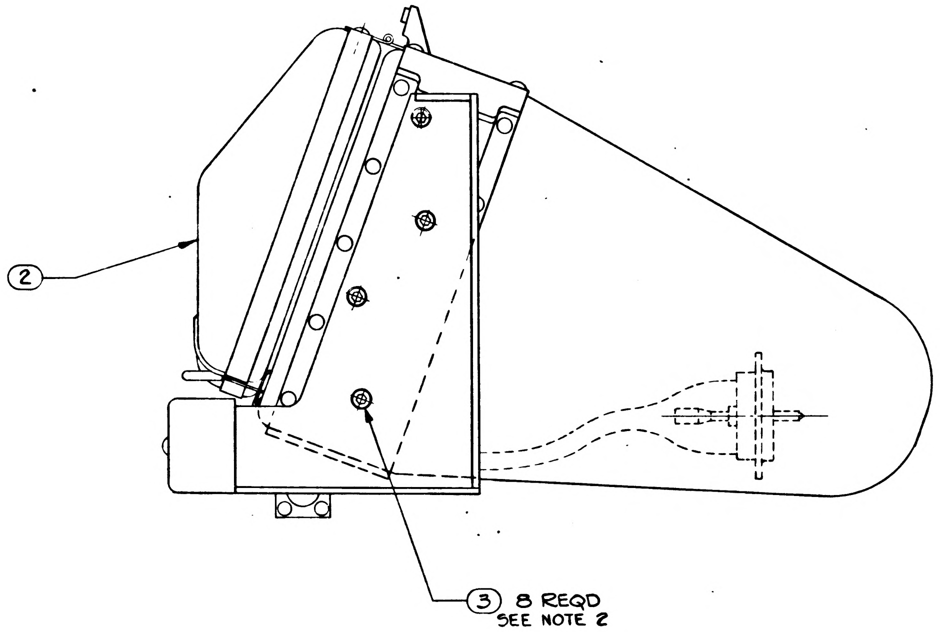


	REV LTR	SH
1021255	C	1 OF 1

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
	B	REPLACES REV A WITH CHANGE PER TDRR 26895		22-FEB-66	A.J.F. / PF
	C	REVISED PER TDRR 27397		3-MAR-66	B. DKH
	D	REVISED PER TDRR 28427		9 MAY 66	







C. REPLACES REV B, WITH CHANGE

SEE NOTE 4

		X	–		8	1021317	SCHEMATIC DIAGRAM, ELECT.
		–	X		7	1021318	SCHEMATIC DIAGRAM, ELECT.
		1	–		6	1021272-021	ANNUNCIATOR PANEL & SUPPORT ASSY
		1	–		5	1004260-186	NAMEPLATE
		–	1		4	1004260-185	NAMEPLATE
		8	8		3	1001488-45	SCREW-HEX SOC.HD.-SELF LOCKING
		1	1		2	1021314	CASE, EYEPIECE STOWAGE (INSEP ASSY)
		–	1		1	1021272-011	ANNUNCIATOR PANEL & SUPPORT ASSY
		021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
8102623	8102630	011
8102632	8102633	021

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___

DO NOT SCALE THIS DRAWING

MATERIAL —

APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN ORZEL DATE 15-OCT-65
CHECKED ED. FOSTER 1FEB66
APPROVAL E. LEMKUIL 1FEB66
CONTRACT NAS 9-497
NASA APPROVAL 3/8/66
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STOWAGE UNIT
EYEPIECE

SIZE J2 CODE IDENT NO. 80230 1021255

SCALE FULL SHEET OF 1

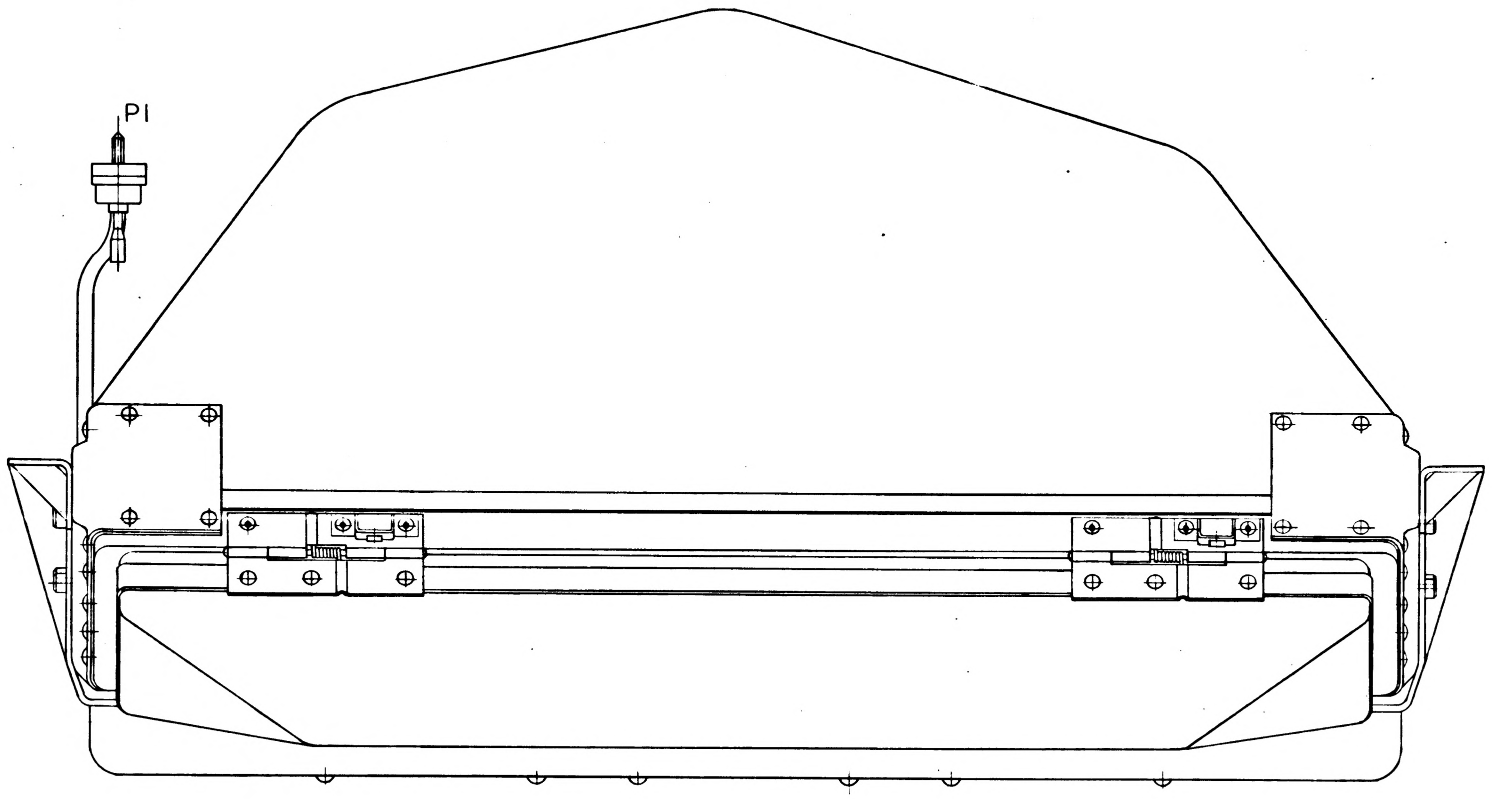
1021255 D

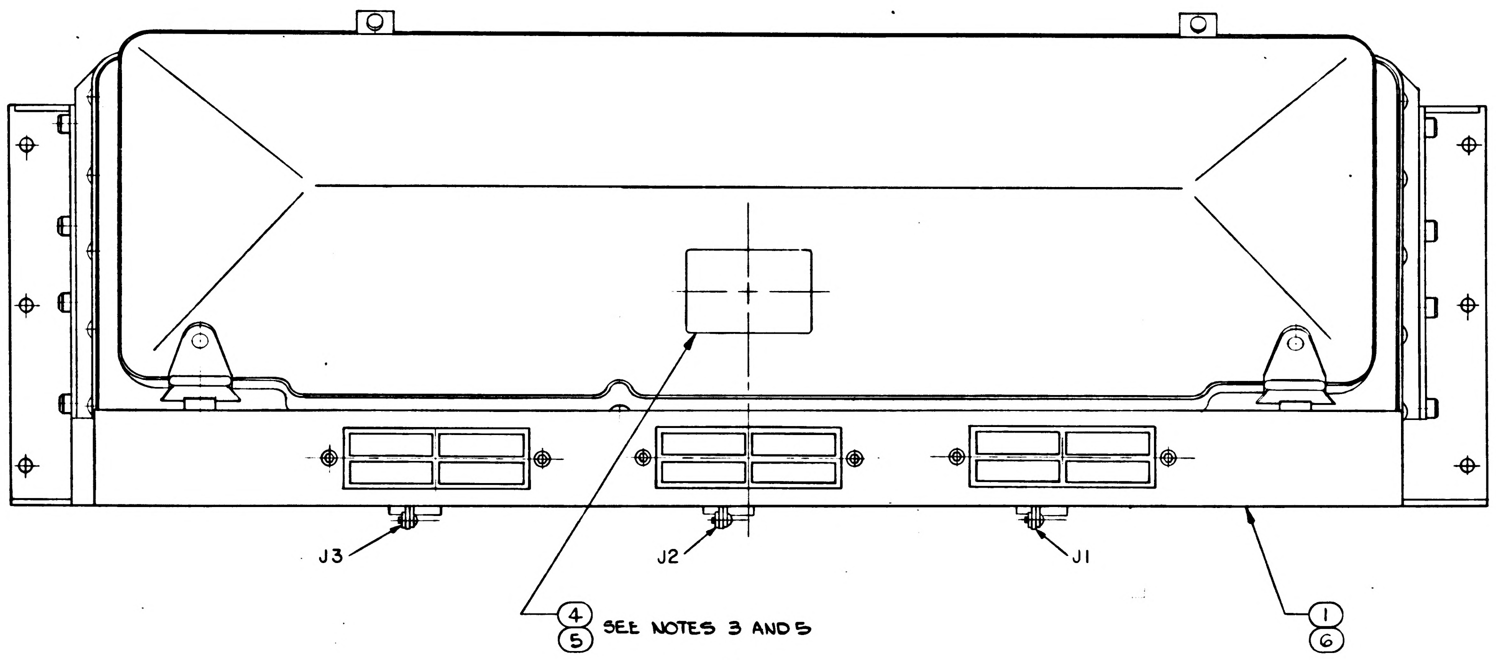
021255

27/1021255

NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. TORQUE ③ TO 33-37 POUND/INCHES.
3. APPLY ④ OR ⑤ PER ND1002219, METHOD II. LOCATE AS SHOWN.
4. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
5. MARK APPLICABLE CONTRACT NUMBER AND SERIAL NUMBER ON ④ OR ⑤ IN ACCORDANCE WITH ND1002023. LETTERS AND NUMERALS TO BE .078 HIGH .
6. INSPECT AND TEST PER REQUIREMENTS OF PROCUREMENT SPECIFICATIONS AS FOLLOWS:
   P/N 1021255-011 PER PS 1021255.
   P/N 1021255-021 PER PS 2016153.



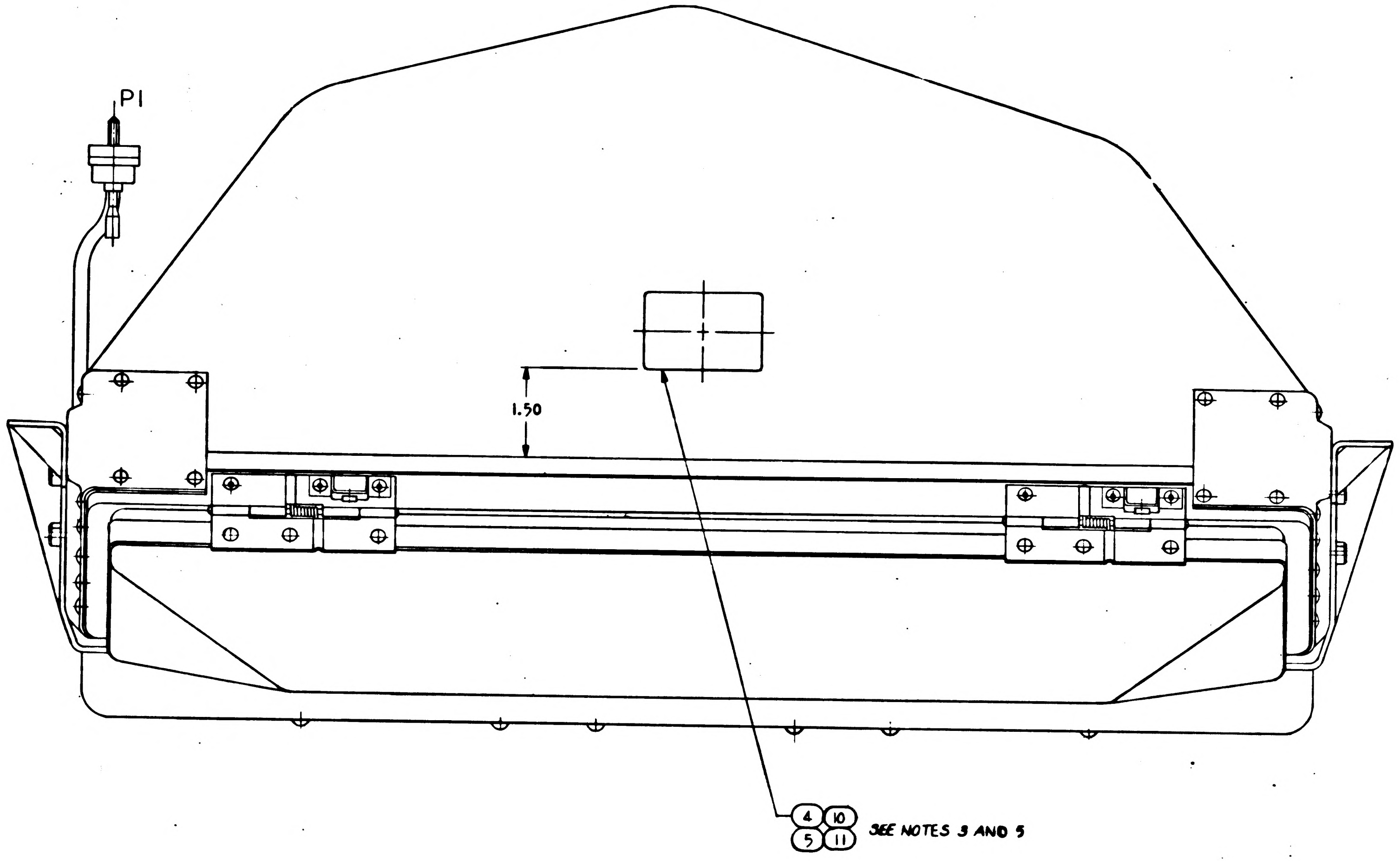


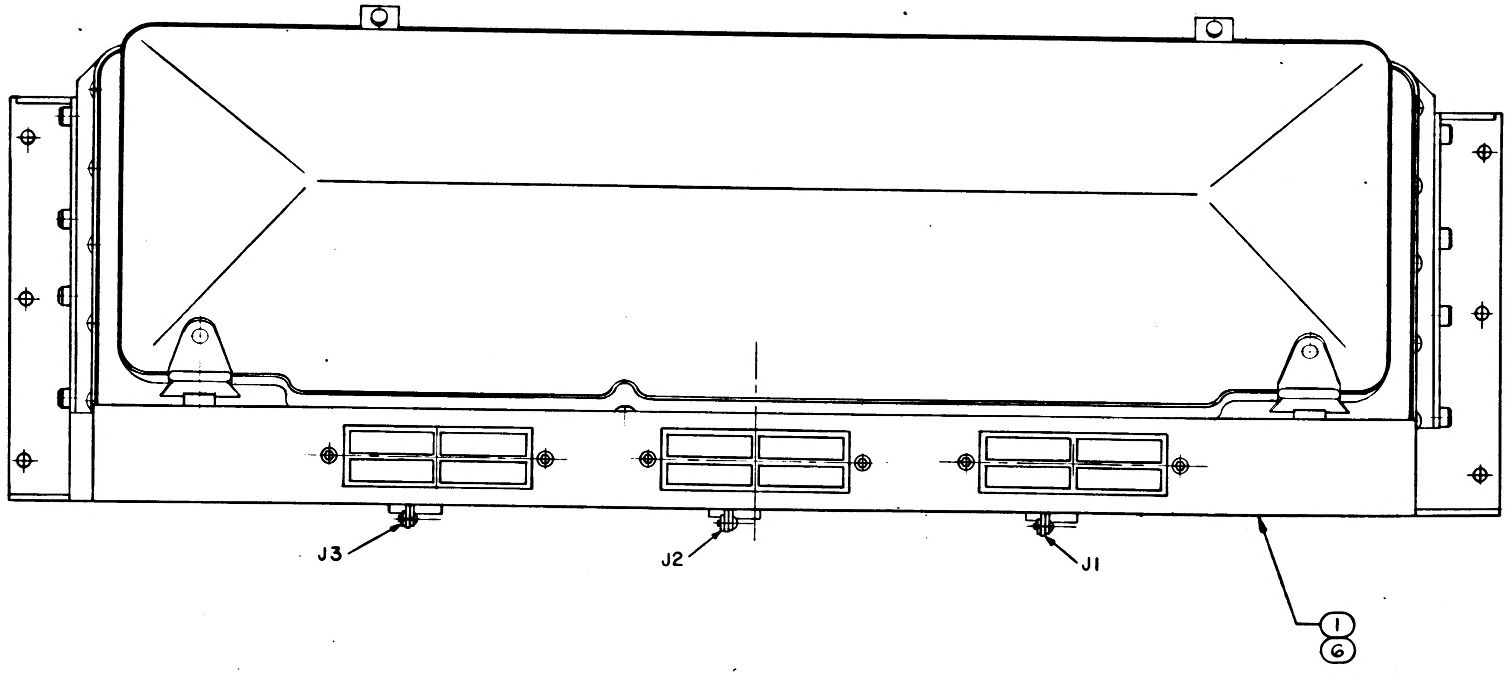
1021255 REV LTR D SH 1 OF 1

1/1021255

NOTES :

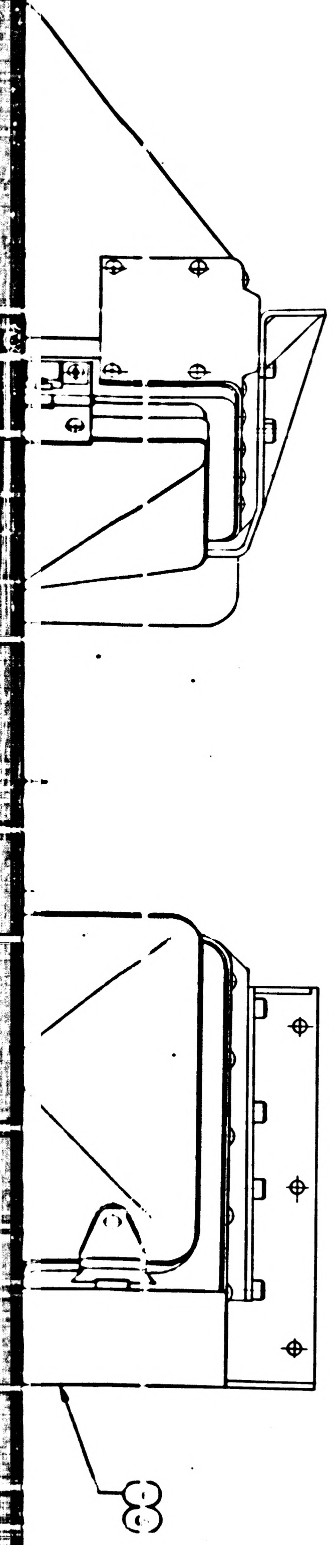
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. TORQUE ③ TO 33-37 POUND/INCHES.
3. APPLY ④, ⑤ ⑩ OR ⑪ PER ND 1002219, METHOD II, LOCATE AS SHOWN.
4. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
5. MARK APPLICABLE CONTRACT NUMBER AND SERIAL NUMBER ON ④ OR ⑤ IN ACCORDANCE WITH ND1002023. LETTERS AND NUMERALS TO BE .078 HIGH.
6. INSPECT AND TEST PER REQUIREMENTS OF PROCUREMENT SPECIFICATIONS AS FOLLOWS:
   P/N 1021255-011 PER PS 1021255.
   P/N 1021255-021 PER PS 2016153.

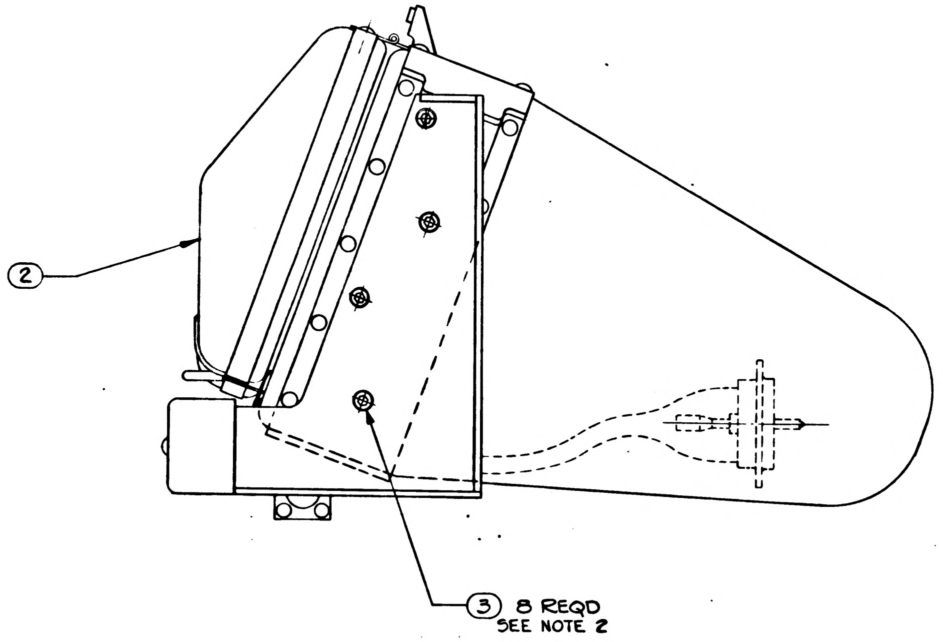




1021255	REV LTR F	SH 1 OF 1

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
	B	REPLACES REV A WITH CHANGE PER TDRR 26895		22-FEB-66	A.J.F. / P7
	C	REVISED PER TDRR 27397		31-MAR-66	B.
	D	REVISED PER TDRR 28427		9 MAY 66	JHP
	E	REVISED PER TDRR 28884		23 MAY 66	DHG
	F	REVISED PER TDRR 30541		17 AUG 66	EMF





C. REPLACES REV B, WITH CHANGE

SEE NOTE 4

041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1	—	—	—		11	1004260-539	NAMEPLATE
—	1	—	—		10	1004260-538	NAMEPLATE
1	1	—	—		9	1021314-011	CASE, EYPIECE STOWAGE (INSEP ASSY)
X	—	X	—		8	1021317	SCHEMATIC DIAGRAM, ELECT.
	X	—	X		7	1021318	SCHEMATIC DIAGRAM, ELECT.
1	—	1	—		6	1021272-021	ANNUNCIATOR PANEL & SUPPORT ASSY
—	—	1	—		5	1004260-186	NAMEPLATE
—	—	—	1		4	1004260-185	NAMEPLATE
8	8	8	8		3	1001488-45	SCREW-HEX SOC.HD.-SELF LOCKING
—	—	1	1		2	1021314-000	CASE, EYEPIECE STOWAGE (INSEP ASSY
—	1	—	1		1	1021272-011	ANNUNCIATOR PANEL & SUPPORT ASSY

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
8102623	8102630	011
8102632	8102633	021

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —

DO NOT SCALE THIS DRAWING

MATERIAL —

APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN ORZEL DATE 15 OCT 65
CHECKED ED FOSTER 1 FEB 66
APPROVAL E. LEMKUIL 1 FEB 66
CONTRACT NAS 9-497
R.H. Bass 3/8/66
NASA APPROVAL A.C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STOWAGE UNIT
EYEPIECE

SIZE J2
CODE IDENT NO. 80230
1021255
SCALE FULL
SHEET 1 OF 1

1021255

1021255 REV LTR F SH 1 OF 1

2/1021255

REVISIONS					
ZONE	LTR	DESCRIPTION	23240 CHG. NO.	DATE	APPROVED

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

		3	3			1010930-017	CONNECTOR, RECEPTACLE ELECTRICAL,- SQUARE END FLANGE, BAYONET LOCKING COUPLING
		1	1			1010825-5	CONNECTOR, PLUG ELECTRICAL 108 PIN CONTACTS (NO. 22)
			1			1008838-4	ANNUNCIATOR, CAUTION/WARNING
		1	1			1008838-3	ANNUNCIATOR, CAUTION/WARNING
		1				1008838-2	ANNUNCIATOR, CAUTION/WARNING
		1	1			1008838-1	ANNUNCIATOR, CAUTION/WARNING
		021	011	EFFEC-TIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN Janowiak DATE 15 OCT 65
CHECKED Ed Foster 15 Oct 65
APPROVAL J. A. Hann 15 Oct 65
APPROVAL R. W. Bras 19 Oct 65
NOT REQUIRED PER LETTER
NASA APPROVAL
MIT APPROVAL 19 Oct 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STOWAGE UNIT
EYE PIECE

CODE IDENT NO. 80230
SIZE C
1021255
CONTRACT NAS 9-497
SCALE —
SHEET 1 OF 1

MIL-1062D D

APOLLO G&N Specification
PS1021255 REV -
Original Issue Date: 9 Mar 66
Release Authority: TDRR 27015
Class A Release
CODE IDENT NO. 80230

PROCUREMENT SPECIFICATION

PRODUCT CONFIGURATION AND ACCEPTANCE TEST SPECIFICATION

G&N ANNUNCIATOR PANEL AND EYEPIECE STOWAGE ASSEMBLY

DRAWING NO. 1021255

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page 1 to 6 inclusive.

APPROVALS	A. C. METZGER NASA/MSC	3/9/66 R. B. 3/9/66 MIT/IL	E. Lamkin ACSP

1. SCOPE

1.1 PURPOSE. This specification establishes the detail requirements for complete identification and acceptance of the Annunciator Panel and Eyepiece Stowage Assembly Part Number 1021255-011 hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, Military Standards and Specifications shall be the issue in effect on the date of request for proposal or invitation to bid.

SPECIFICATIONS

APOLLO G&N

ND1002214	General Specification for Preservation, Packaging, Packing and Container Marking of APOLLO Guidance and Navigation Major Assemblies, Assemblies, Subassemblies, Parts and Associated Ground Support Equipment

STANDARDS

Military

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

DRAWINGS

APOLLO G&N

1021255	Annunciator Panel and Eyepiece Stowage Assembly

(Copies of specifications, standards, drawings, bulletins, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 CONFLICTING REQUIREMENTS. In the event of a conflict between requirements, the following order of precedence shall apply. The contractor shall also notify MIT/IL APOLLO Management of the conflict.

a. The contract.
b. This specification.
c. Documents listed in this section.

3. REQUIREMENTS

3.1 PERFORMANCE

3.1.1 Indicators-Caution/Warning. The assembly indicators shall be illuminated in accordance with Table I.

TABLE I

INDICATORS

INDICATOR	INPUT VOLTAGE	INPUT (P1)		CONDITION
		HI	LO	
MASTER ALARM	28.0±0.5 vdc	54	53	Illuminated
(blank)	↑	15	17	↑
ZERO ENCODER		41	30	
IMU DELAY		42	31	
IMU FAIL		60	61	
AGC PWR FAIL		71	82	
PGNS	↓	51	52	
(blank)	28.0±0.5 vdc	50	70	
GIMBAL LOCK	5.0±0.1 vdc	18	19	
IMU TEMP	28.0±0.5 vdc	62	63	
ACCEL. FAIL	28.0±0.5 vdc	73	84	↓
CDU FAIL	28.0±0.5 vdc	72	83	Illuminated

3.1.2 Continuity and DC Resistance. Continuity and dc resistance shall be in accordance with Table II.

3.1.3 Insulation Resistance. The insulation resistance between pins of P1 and the chassis shall not be less than 100 megohms.

TABLE II

OPTICS EYEPIECE HEATER CIRCUIT

PINS		RESISTANCE (ohms)
FROM	TO	
P1-92	J1-4	<0.1
P1-67	J1-7	↑
P1-92	J2-4	
P1-67	J2-7	
P1-92	J3-4	↓
P1-67	J3-7	<0.1

3.2 PRODUCT CONFIGURATION

3.2.1 Drawings. The configuration of the assembly shall be in accordance with APOLLO G&N Drawing 1021255 and all drawings and engineering data referenced thereon.

3.2.2 Maximum Weight. The maximum weight of the assembly shall be 7.0 pounds.

4. QUALITY ASSURANCE PROVISIONS

4.1 PRODUCT PERFORMANCE AND CONFIGURATION REQUIREMENTS/QUALITY VERIFICATION CROSS REFERENCE INDEX

Test/Examination	Requirement	Method
Indicator-Caution/Warning	3.1.1	4.3.6
Continuity and DC Resistance	3.1.2	4.3.3
Insulation Resistance	3.1.3	4.3.4.
Drawing Compliance	3.2.1	4.3.1
Maximum Weight	3.2.2	4.3.5

4.2 GENERAL. The contractor responsible for the manufacture of the assembly shall be responsible for the accomplishment of each test required herein.

4.2.1 Test Conditions

4.2.1.1 Environmental. Unless otherwise specified, the assemblies shall be tested under the following ambient conditions:

a. Temperature: 25° ±10°C
b. Relative Humidity: 90% max
c. Barometric Pressure: 28 to 32 inches of Hg

4.2.1.2 Inputs. The assembly shall be tested with the following inputs:

a. 5.0±0.1 vdc
b. 28.0±0.5 vdc

4.2.2 Nonconforming Units. Failure of the unit to pass any examination or test of this specification shall automatically classify the unit as nonconforming. Each nonconforming unit corrected by the contractor shall be reinspected. Reinspection may be limited to the test or examination which defined the nonconformance, or, when directed by the cognizant inspector, a complete retest and reexamination may be required. Nonconforming units which have not been corrected will be considered for acceptance only upon formal application by the contractor to the cognizant NASA representative.

4.3 TESTS

4.3.1 Drawing Compliance. The assembly shall be visually examined for compliance to the requirements of Drawing 1021255. Particular attention shall be given to inspection for nicks, scratches, burrs, dents, encapsulant defects, contaminants, pin misalignment, and legibility and appearance of markings.

4.3.2 Workmanship-Vibration. With the assembly mounted in the same manner which it mounts in the spacecraft, it shall be subjected to vibration along each of the spacecraft axes. The vibration shall be simple harmonic motion swept from 10 to 2000 cps at a rate of 1 octave/15 seconds. The magnitude of vibration shall be 3.5g rms limited to a 0.3 inch pp constant displacement from 10 cps to the crossover frequency.

The assembly shall be tested in accordance with 4.3.2.1 and 4.3.2.2 during the 10 to 2000 cps vibration.

The values specified in 4.3.2.2 shall be continuously monitored during vibration as applicable and the specified parameters shall not be exceeded for more than 10 milliseconds. After vibration the assembly shall be visually examined as specified in 4.3.1 and tested in accordance with 4.3.3 through 4.3.6.

4.3.2.1 Indicator - Caution/Warning. With voltage in accordance with Table I applied to P1, the lamps shall be illuminated without flickering during vibration as determined by visual observation.

4.3.2.2 Continuity. Continuity shall exist between the pins of connector P1 and J1, J2 and J3 in accordance with Table II.

4.3.3 Continuity and DC Resistance. The dc resistance between the pins listed in Table II shall be as specified therein, when measured in accordance with Method 303 of Standard MIL-STD-202.

4.3.4 Insulation Resistance. The resistance between the pins of connector P1 and the chassis of the Annunciator Panel Assembly shall be as specified in 3.1.3 when measured in accordance with Method 302 of Standard MIL-STD-202. The megohmmeter used shall have an output of 225±75 vdc, limited to a short circuit current of 6 μa.

4.3.5 Maximum Weight. The assembly shall be weighed to the nearest hundreth pound.

4.3.6 Indicators-Caution/Warning. The indicators shall be illuminated in accordance with Table I.

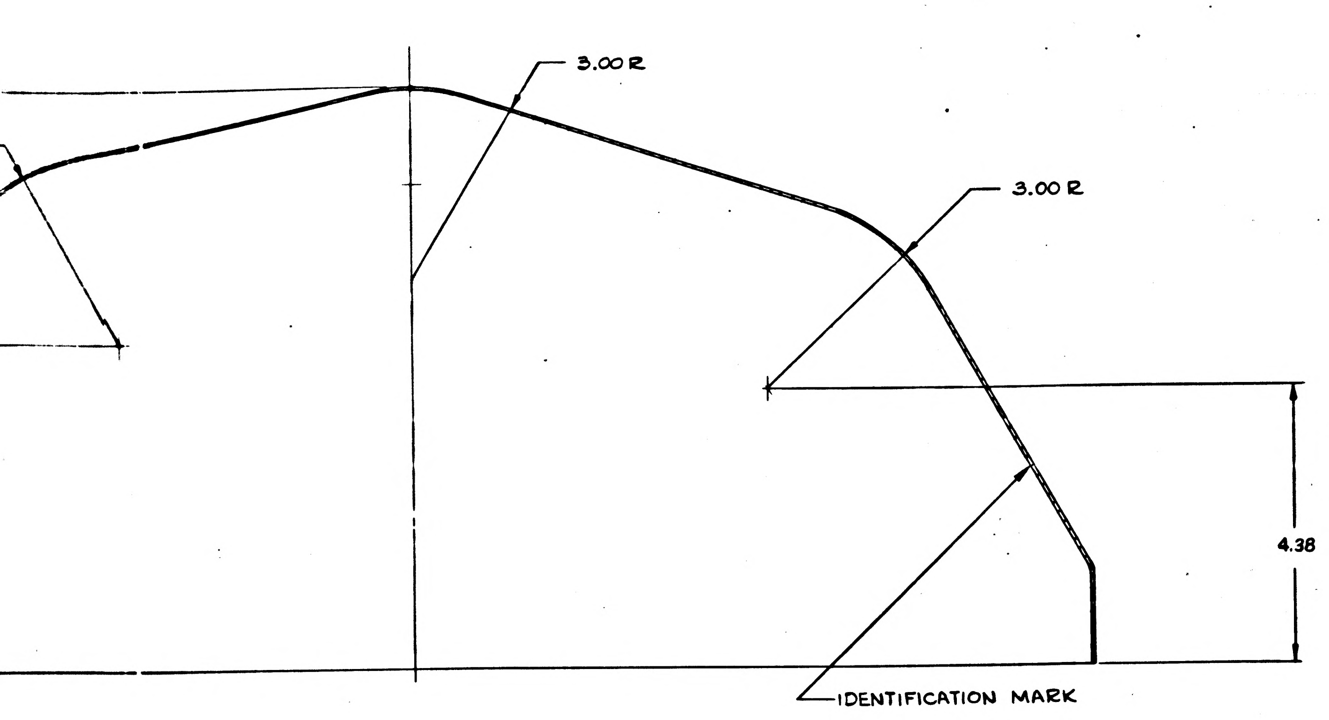
5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND1002214.

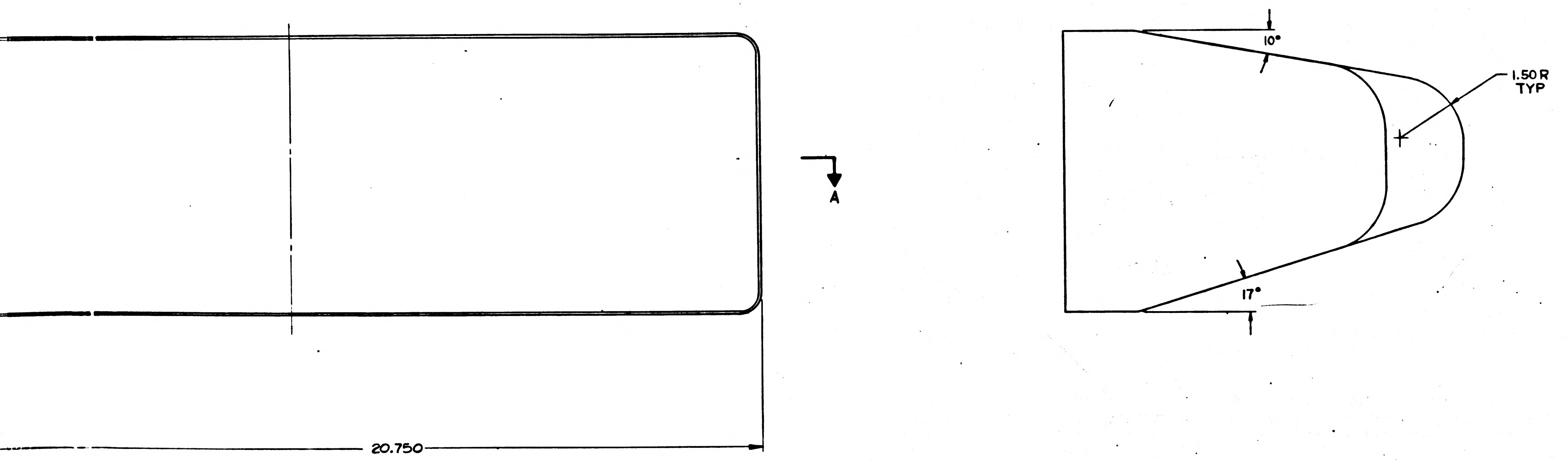
6. NOTES. None.

RO:efo

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			



SECTION A-A



2H

MASTER

	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.015	+ 2°
-	±.03	-

DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN 18 Nov 65 DATE
CHECKED Ed Foster 15 JAN 66
APPROVAL 15 JAN 66
APPROVAL
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE, STOWAGE

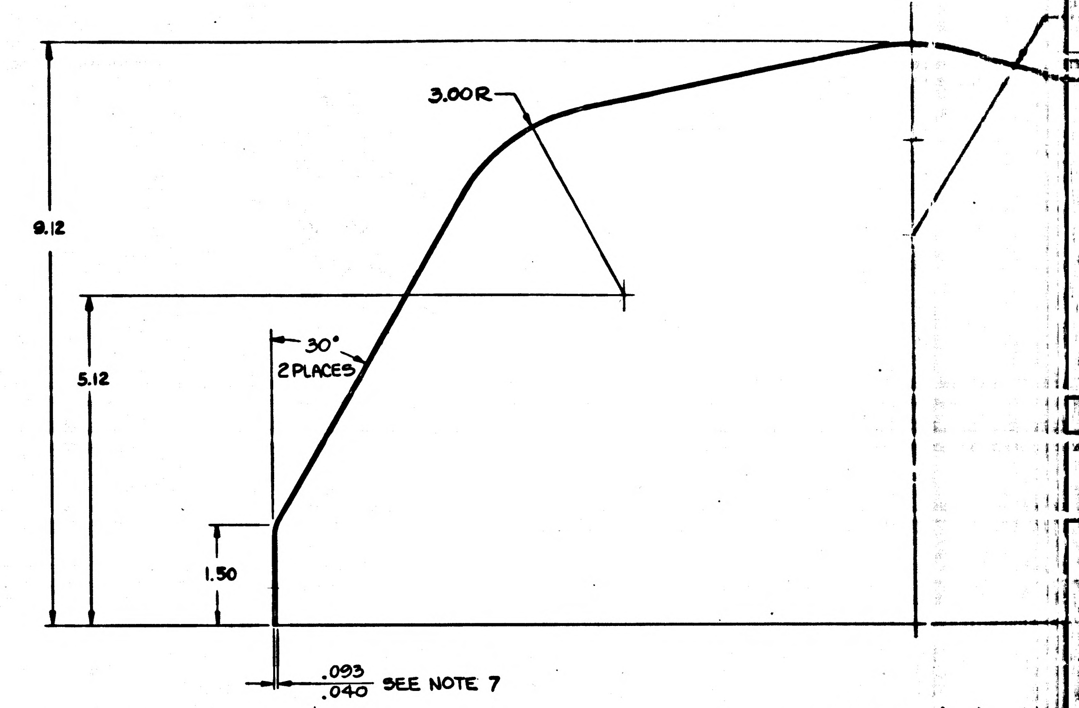
CODE IDENT NO. 80230
SIZE J_2
1021256
SCALE FULL
SHEET OF

1021256 REV LTR SH

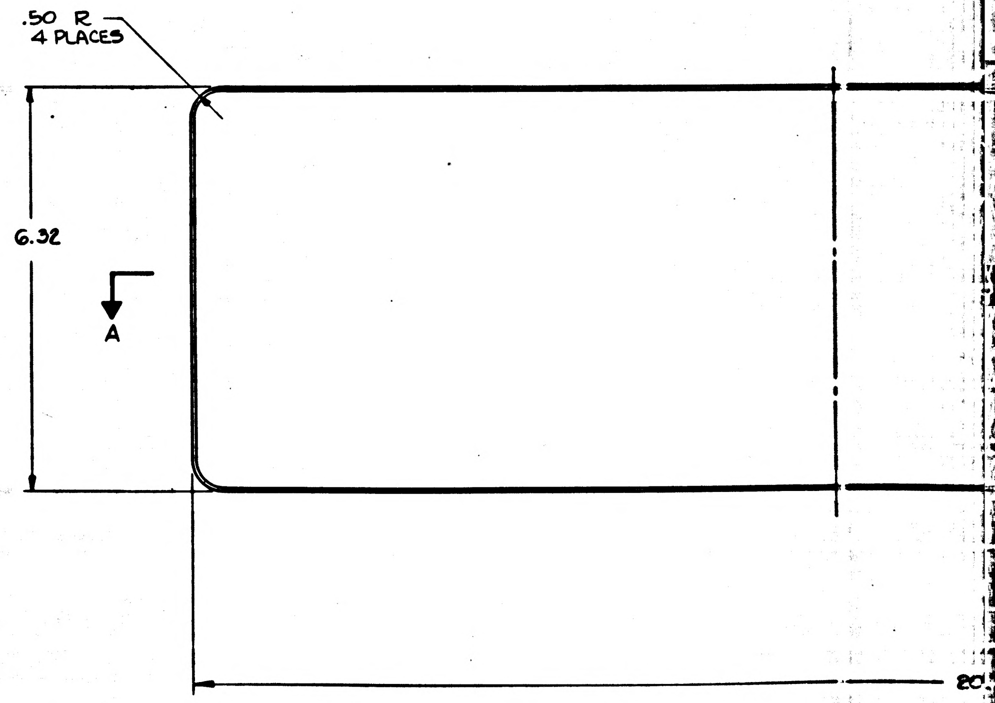
F-2

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ABS PLASTIC SHEET PER ASTM-D-1788-62T TYPE 3, GRADE 1, COLOR GRAY # 36231 OF FED-STD-595.
3. UNLESS OTHERWISE SPECIFIED:
   - A. SURFACE ROUGHNESS TO BE AS DRAWN WITH GRAIN EFFECT ON OUTSIDE SURFACE OF COVER.
   - B. DRAW MARKS ARE ALLOWABLE ON INSIDE SURFACE OF COVER.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. PARTS MAY BE RESTRAINED TO FACILITATE DIMENSIONAL INSPECTION.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. THICKNESS TO BE .040-.060 WITHIN .12 OF EDGE.


3.00R
9.12
5.12
30°
2 PLACES
1.50
.093
.040
SEE NOTE 7

SECTION A-A

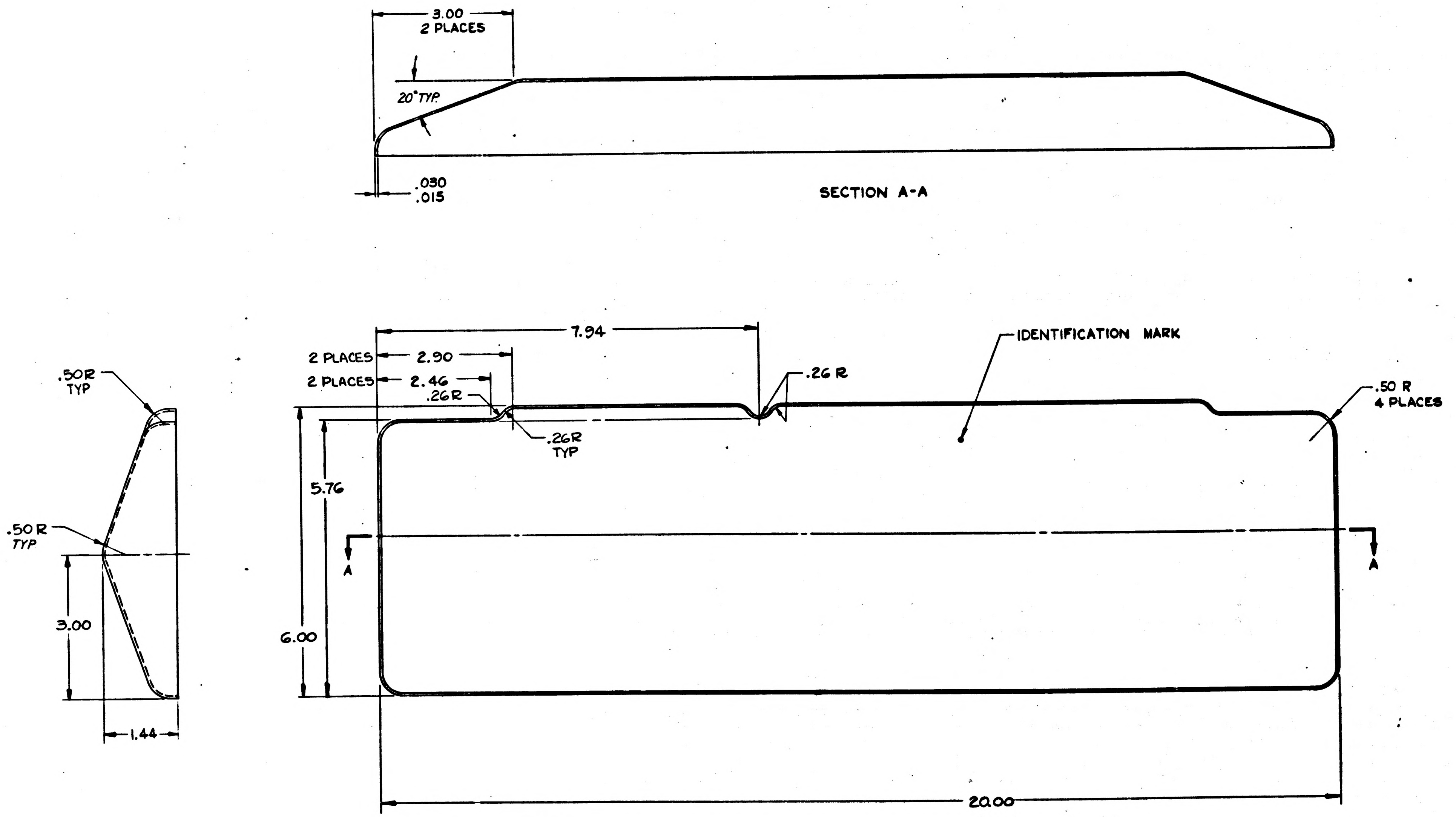

.50 R
4 PLACES
6.32
A
20

1021256 REV LTR A SH 1 of 1

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ABS PLASTIC SHEET PER ASTM-D-1788-62T TYPE 3, GRADE 1, COLOR GRAY # 36231 OF FED-STD-595.
3. UNLESS OTHERWISE SPECIFIED:
   - A. SURFACE ROUGHNESS TO BE AS DRAWN WITH GRAIN EFFECT ON OUTER SURFACE OF COVER.
   - B. DRAW MARKS ARE ALLOWABLE ON INSIDE SURFACE OF COVER.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. COVER MAY BE RESTRAINED TO FACILITATE DIMENSIONAL INSPECTION.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.


3.00
2 PLACES
20° TYP
.030
.015
SECTION A-A
7.94
2 PLACES
2.90
2 PLACES
2.46
.26R
.26R
.26R
TYP
IDENTIFICATION MARK
.50 R
4 PLACES
.50R
TYP
.50 R
TYP
3.00
1.44
5.76
6.00
A
A
20.00

MASTER

	1021256-021
1021314	1021256-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS ±.015 ±.03 ANGLES + − 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN [illegible] DATE 23 NOV 65
CHECKED [illegible] 15 JAN 66
APPROVAL [illegible] 15 JAN 66
APPROVAL [illegible] 1/11/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL [illegible] 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

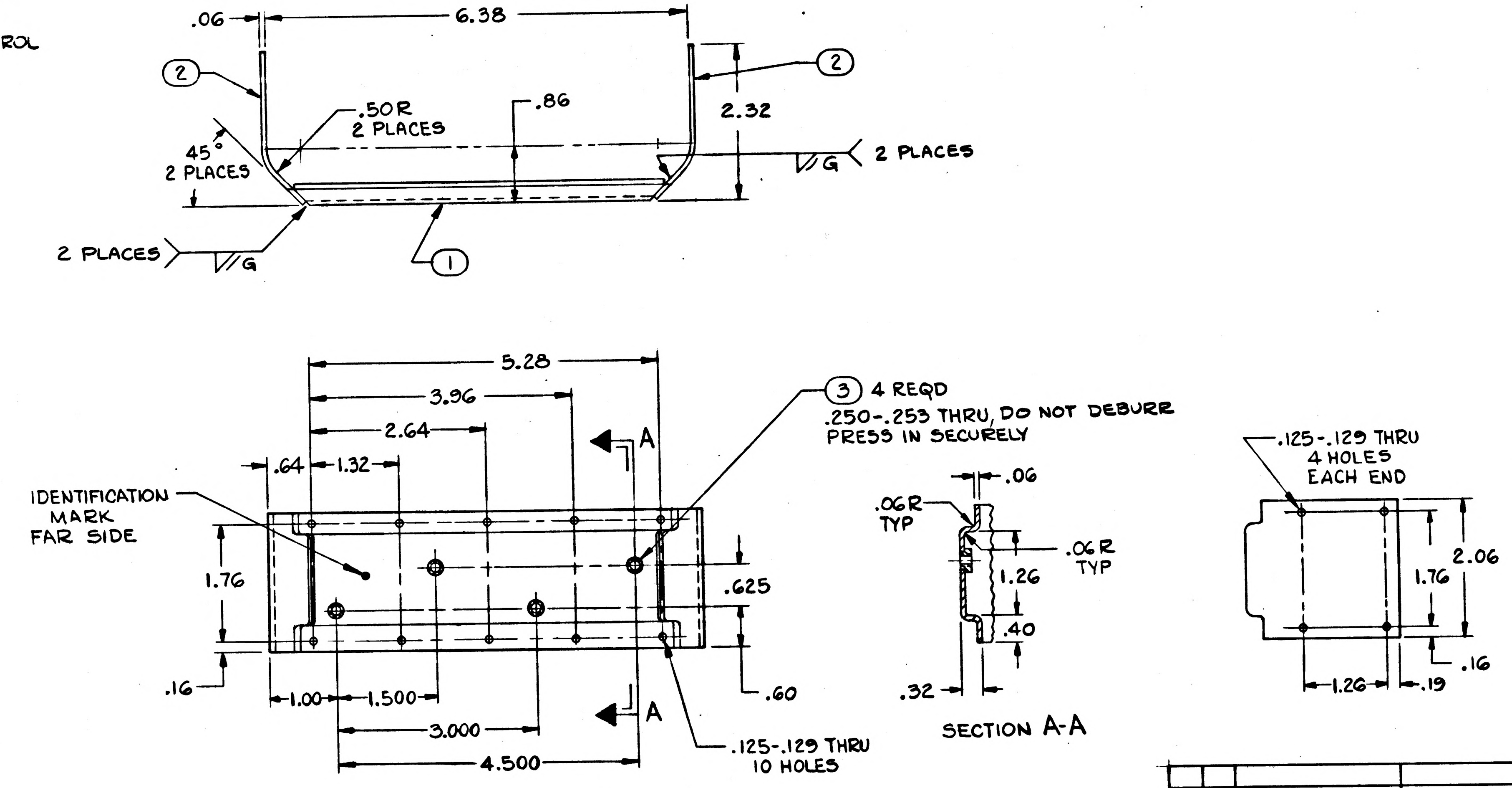
COVER, CASE

CODE IDENT NO. 80230 SIZE E 1021257
SCALE FULL SHEET OF

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25327			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. WELD PER MIL-W-8604
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.


.06
6.38
②
②
.50R
2 PLACES
.86
2.32
45°
2 PLACES
G
2 PLACES
2 PLACES
G
①
5.28
3.96
2.64
.64
1.32
A
IDENTIFICATION MARK FAR SIDE
1.76
.625
.16
1.00
1.500
3.000
4.500
A
.60
.125-.129 THRU 10 HOLES
③ 4 REQD
.250-.253 THRU, DO NOT DEBURR PRESS IN SECURELY
.06R TYP
.06
.06R TYP
1.26
.40
.32
SECTION A-A
.125-.129 THRU 4 HOLES EACH END
2.06
1.76
.16
1.26
.19

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 7	3	4	1010861-23	NUT, PLAIN, CLINCH
SEE NOTE 7 & 5	2	2	1021258-002	END PIECE
SEE NOTE 2 & 5	1	1	1021258-001	FRONT PIECE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ ±.005 +2°
− ±.02 −
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Oszel DATE 26 NOV 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lambert 15 JAN 66
APPROVAL R.H. Lan 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL W Kupfer 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

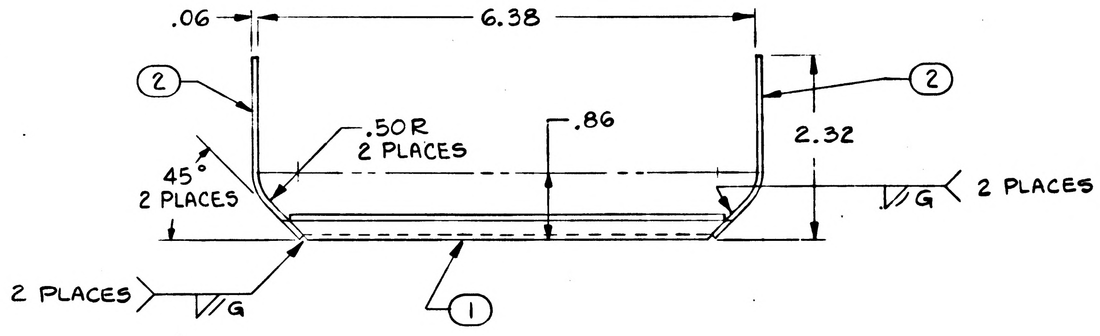
SUPPORT, RH-
CASE
(INSEPARABLE ASSEMBLY)

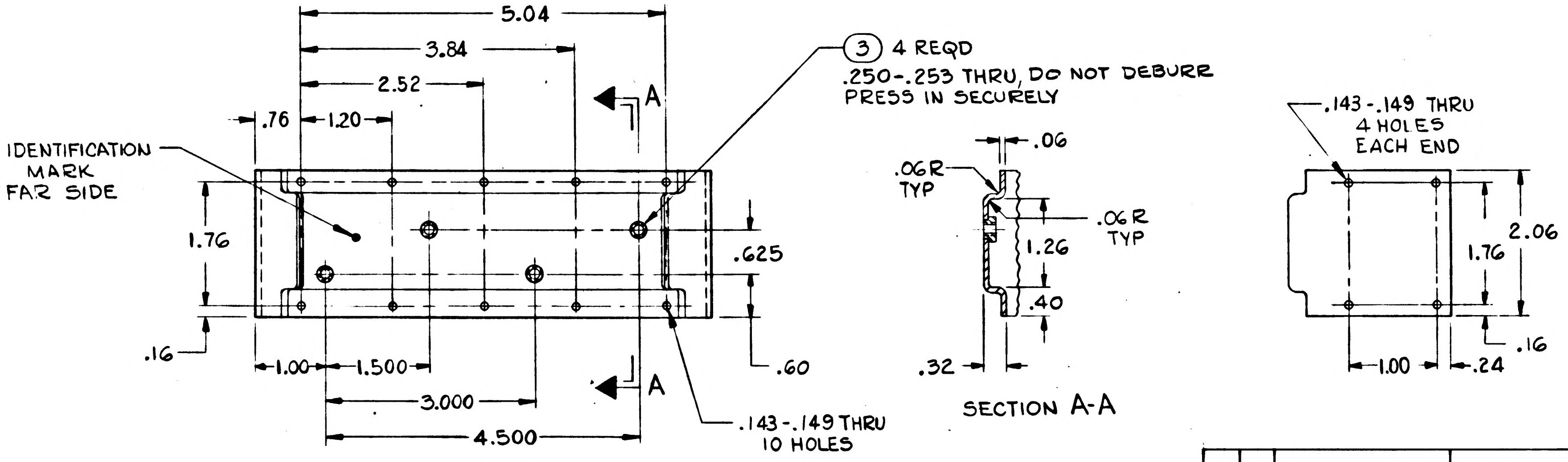
CODE IDENT NO. 80230
SIZE D
1021258
SCALE FULL
SHEET 1 OF 1

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 5327			
	B	REVISED PER TDRR 26899		4 MAR 66	RNT

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. WELD PER MIL-W-8604
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS I, COLOR GREY
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.


.06
6.38
②
②
.50R
2 PLACES
.86
2.32
45°
2 PLACES
2 PLACES
2 PLACES
G
G
①


5.04
3.84
2.52
.76
1.20
③ 4 REQD
.250-.253 THRU, DO NOT DEBURR
PRESS IN SECURELY
A
A
IDENTIFICATION
MARK
FAR SIDE
1.76
.625
.16
.60
1.00
1.500
3.000
4.500
.143-.149 THRU
10 HOLES
.06
.06R
TYP
.06R
TYP
1.26
.40
.32
SECTION A-A
.143-.149 THRU
4 HOLES
EACH END
2.06
1.76
.16
1.00
.24

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 7	3	4	1010861-23	NUT, PLAIN, CLINCH
SEE NOTE 7 & 5	2	2	1021258-002	END PIECE
SEE NOTE 2 & 5	1	1	1021258-001	FRONT PIECE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
±	±.005 ±.02	±2°

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Orzel DATE 26 NOV 65
CHECKED 15 JAN 66
APPROVAL 15 JA
APPROVAL 1/66
NASA APPROVAL
MIT APPROVAL 1/18/66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

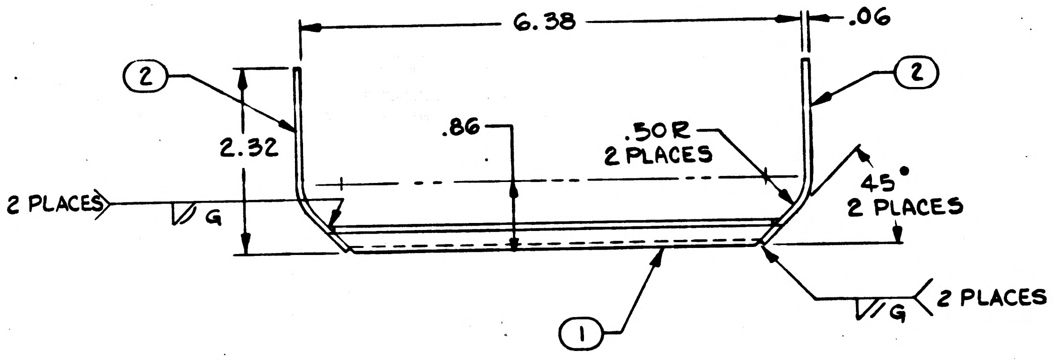
SUPPORT, RH -
CASE
(INSEPARABLE ASSEMBLY)

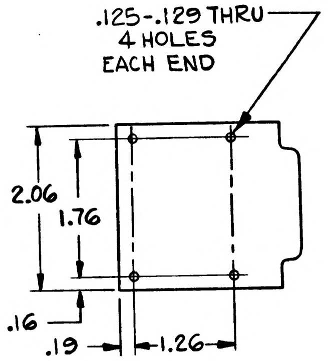
CODE IDENT NO. 80230
SIZE D
1021258
SCALE FULL
SHEET 1 OF 1

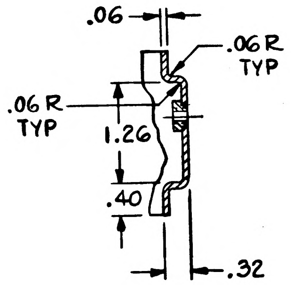
REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

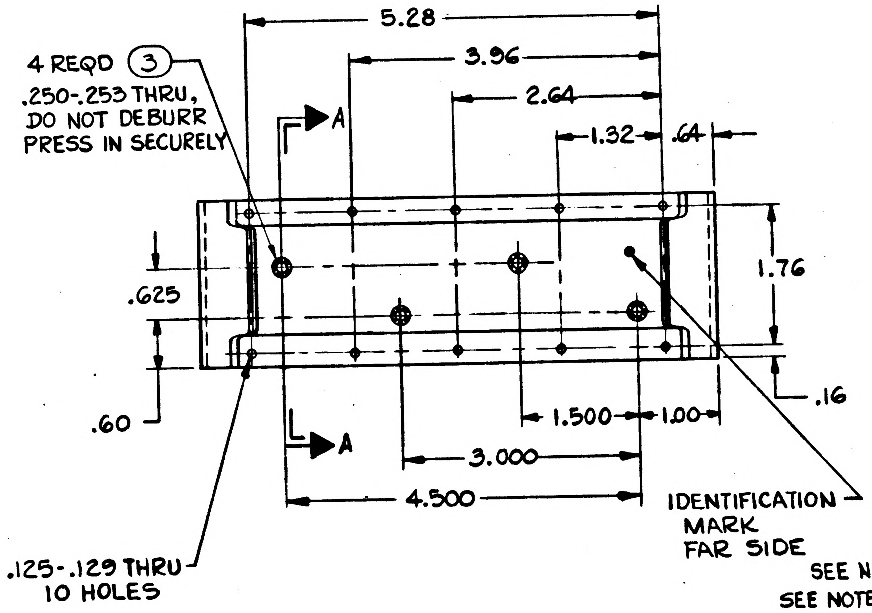
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. WELD PER MIL-W-8604.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.


6.38
.06
②
②
2.32
.86
.50 R
2 PLACES
45°
2 PLACES
2 PLACES
G
G
2 PLACES
①


.125-.129 THRU
4 HOLES
EACH END
2.06
1.76
.16
.19
1.26


.06
.06 R
TYP
.06 R
TYP
1.26
.40
.32

SECTION A-A


5.28
3.96
2.64
1.32
.64
4 REQD ③
.250-.253 THRU,
DO NOT DEBURR
PRESS IN SECURELY
A
A
1.76
.625
.60
.16
1.500
1.00
3.000
4.500
.125-.129 THRU
10 HOLES
IDENTIFICATION
MARK
FAR SIDE

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 7	3	4	1010861-23	NUT, PLAIN, CLINCH
SEE NOTES 2&5	2	2	1021259-002	END PIECE
SEE NOTES 2&5	1	1	1021259-001	FRONT PIECE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.005	+ 2°
−	±.02	−

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Engel DATE 26 Nov 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lambert 15 JAN 66
APPROVAL 1/15/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL W Kupfer 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

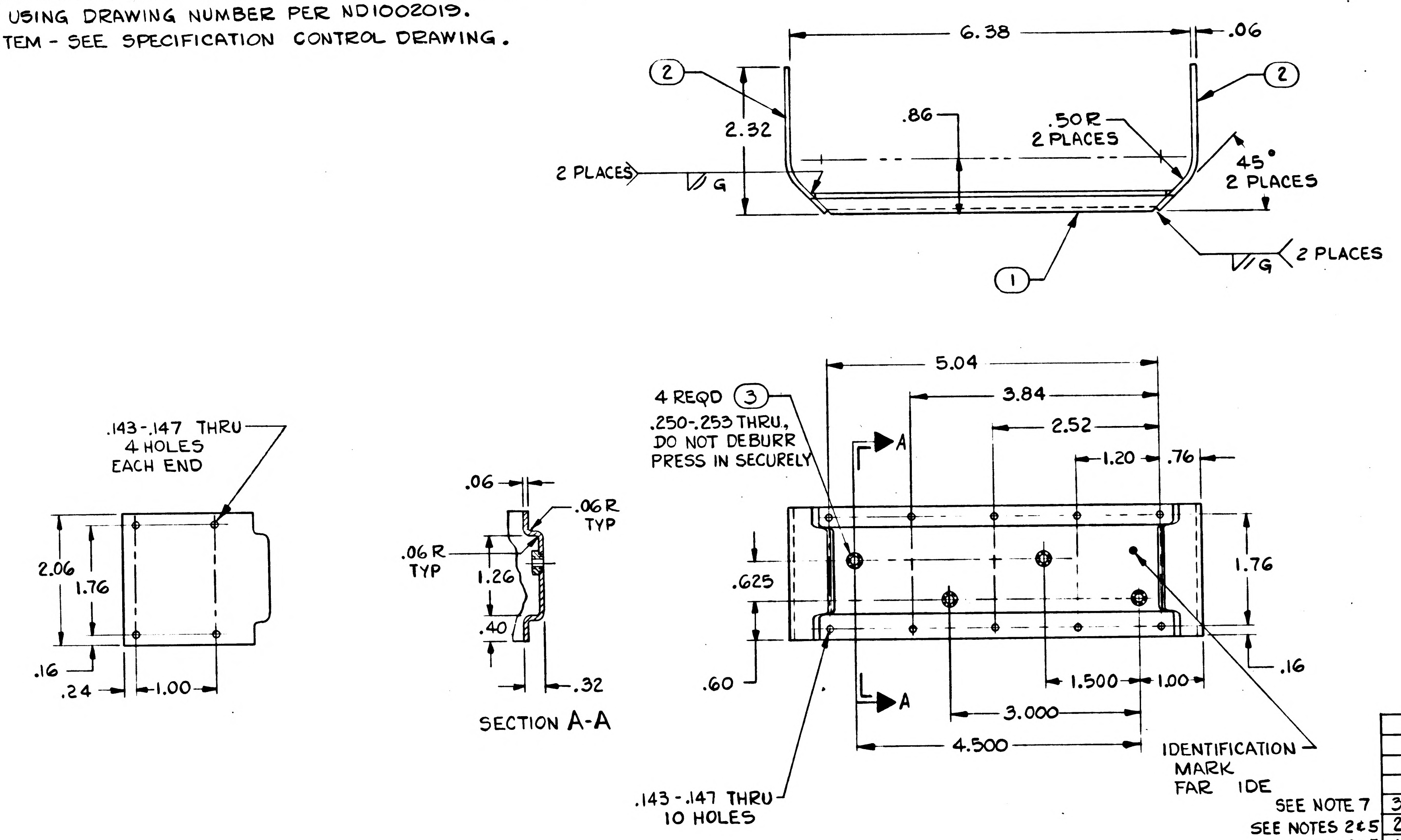
SUPPORT, LH-
CASE
(INSEPARABLE ASSEMBLY)

CODE IDENT NO.	SIZE	
80230	D	1021259

SCALE FULL
SHEET 1 OF 1

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			
	B	REVISED PER TDRR 26898		14 MAR 66	RLP

NOTES :
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL : ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. WELD PER MIL-W-8604.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. FINISH : ANODIZE PER MIL-A-8625, TYPE II, CLASS I, COLOR GRAY
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.


6.38
.06
②
②
2.32
.86
.50 R
2 PLACES
45°
2 PLACES
2 PLACES
G
①
G
2 PLACES
.143-.147 THRU
4 HOLES
EACH END
2.06
1.76
.16
.24
1.00
.06
.06 R
TYP
.06 R
TYP
1.26
.40
.32
4 REQD ③
.250-.253 THRU,
DO NOT DEBURR
PRESS IN SECURELY
5.04
3.84
2.52
1.20
.76
A
A
.625
1.76
.60
.16
1.500
1.00
3.000
4.500
.143-.147 THRU
10 HOLES
IDENTIFICATION
MARK
FAR IDE

SECTION A-A

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 7	3	4	1010861-23	NUT, PLAIN, CLINCH
SEE NOTES 2&5	2	2	1021259-002	END PIECE
SEE NOTES 2&5	1	1	1021259-001	FRONT PIECE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.005	+ 2°
-	±.02	-

DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN Ziegel DATE 29 Nov 65
CHECKED [illegible] 5 Jan 66
APPROVAL [illegible] 15 Jan 66
APPROVAL [illegible]
NASA APPROVAL
MIT APPROVAL Whirley 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

SUPPORT, LH-
CASE
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE D
1021259
SCALE FULL
SHEET 1 OF 1

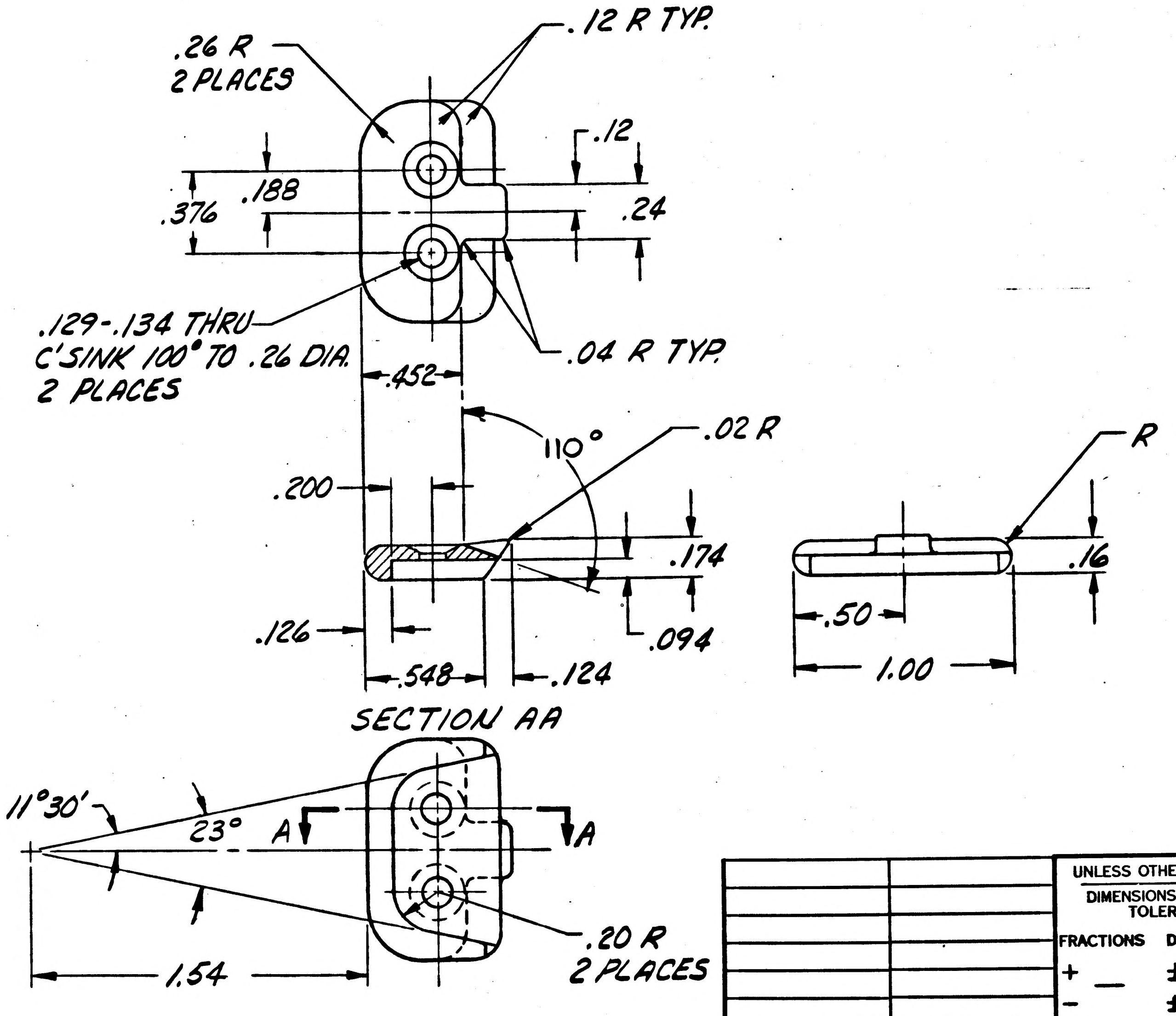
MIL-10630 D

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8, TEMPER H32 (AL ALY 5052).
3. UNLESS OTHERWISE SPECIFIED:
   - A. ALL CORNERS TO BE .015 R OR CHAMFER.
   - B. SURFACE ROUGHNESS MUST NOT EXCEED 125√.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GREY
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.


.26 R
2 PLACES
.12 R TYP.
.12
.188
.376
.24
.129-.134 THRU
C'SINK 100° TO .26 DIA.
2 PLACES
.04 R TYP.
.452
110°
.02 R
.200
.174
.094
.126
.548
.124
SECTION AA
R
.16
.50
1.00
11°30'
23°
A
A
.20 R
2 PLACES
1.54

1021262	1021255-021
1021262	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	±.005	+ 0°30'
−	±.01	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN C.M. Kulp DATE 1 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lembeck 15 JAN 66
APPROVAL 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

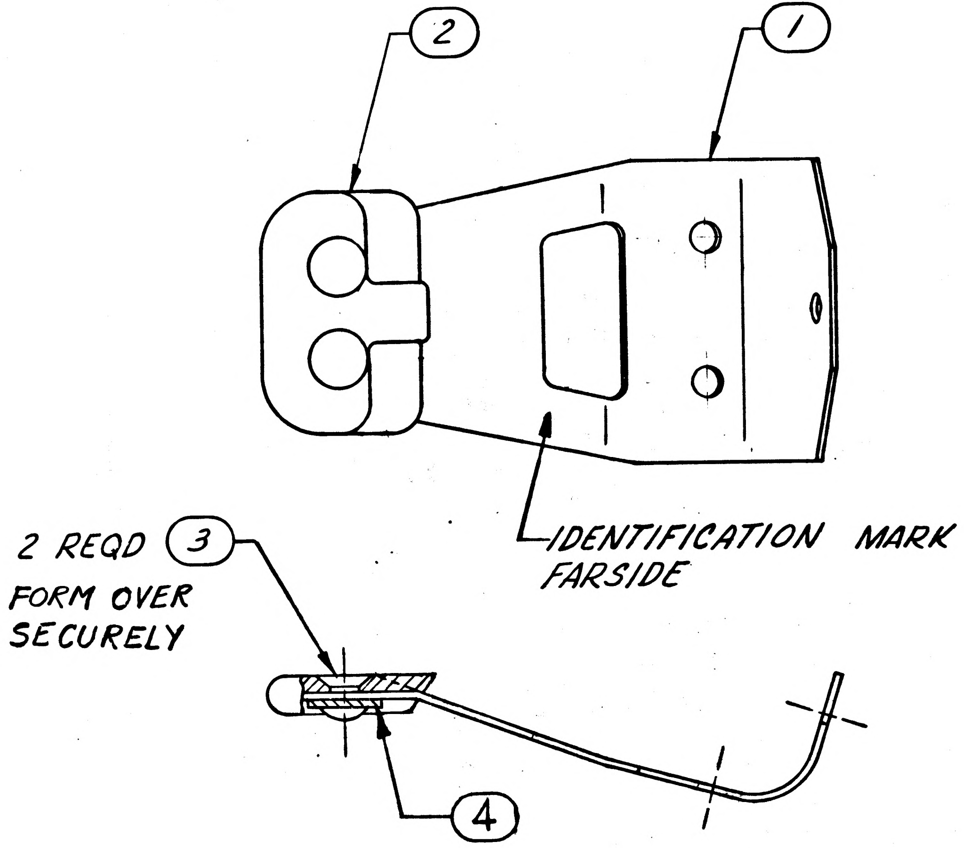
TAB, CATCH

CODE IDENT NO. 80230
SIZE C
1021261
SCALE 2/1
SHEET 1 OF 1

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND 1002019.



ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
4	1	1021270	PLATE, MOUNTING, TAB
3	2	MS20426A4-3	RIVET, 100° CSK
2	1	1021261	TAB, CATCH
1	1	1021260	SPRING, CATCH

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — DECIMALS + — ANGLES + —
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN C. M. Kulp DATE 1 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkul 15 JAN 66
APPROVAL R. W. Bass 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CATCH, CLAMPING
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE C
1021262
SCALE 2/1
SHEET 1 OF 1

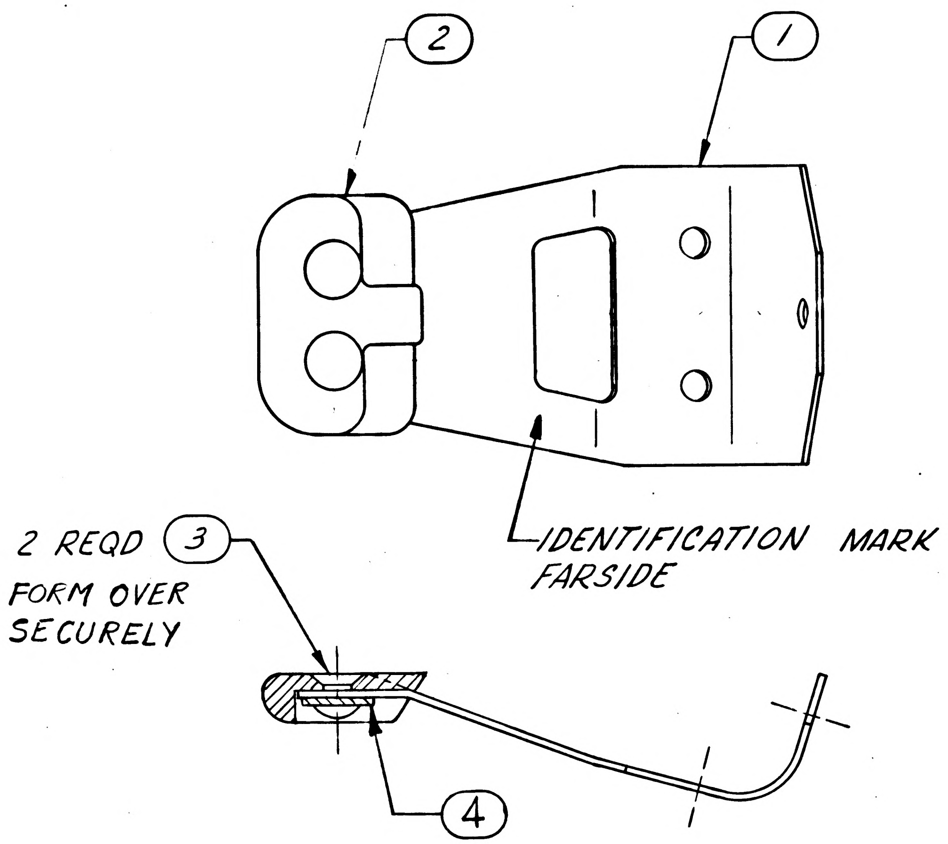
MIL 1077C—P

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND 1002019.
3. APPLY CHEMICAL FILM PER MIL-C-5541 TO RIVETS AFTER ASSEMBLY

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25221			
B		REVISED PER TDRR 26905		11 MAR 66	



ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
4	1	1021270	PLATE, MOUNTING, TAB
3	2	MS20426AD4-3	(1897063-203) RIVET, 100° CSK
2	1	1021261	TAB, CATCH
1	1	1021260	SPRING, CATCH

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − DECIMALS + — − ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN C. M. Kulp DATE 1 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkuhl 15 JAN 66
APPROVAL R. W. Bass 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CATCH, CLAMPING
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE C
1021262
SCALE 2/1
SHEET 1 OF 1

MIL 1077C—P

Sheet 1 of 10
Part No. 1021263
Date: 20 OCT. 64
TDRR 13810
Revision A
~~Class B~~
Class A

NASA

RETROFIT INSTRUCTION BULLETIN (RIB) FOR NECP-A8

ORIGINATOR: AC SPARK PLUG DIVISION, GMC

Revision Letter	TDRR	Pages Revised	APPROVALS		Date
			MIT	NASA	
A	16414	1,5,6,7,8,9,10			19 FEB 65

Prepared by ______ Date 9 Jul 64
P.C. Engineering Approval ______ Date [illegible] July 1964
Design Review Board Approval ______ Date 20 Oct 64
MIT/IL Approval ______ Date 20 Oct '64
NASA Approval ______ Date 10/20/6

Sheet 2 of 10
Part No. 1021263
Date: 20 OCT. 64
TDRR 13810
Revision ______

I. PURPOSE

This Retrofit Information Bulletin provides retrofit instructions for Oscillograph Console Assembly, P/N 1900000-011, and retrofit instructions for phase sensitive demodulators, P/N 1900068-011. This retrofit will modify the phase sensitive demodulators (which are plug-in modules of the Oscillograph Amplifier Assemblies of the Oscillograph Console Assembly) in order to:

A. Eliminate excessive phase shift in the signal channel.

B. Prevent oscillation in the signal channel.

C. Reduce capacitive coupling in the signal channel.

D. Provide the required phase shift in the reference channel.

E. Eliminate noise in the reference channel and provide reliable operation.

F. Reduce pen oscillations caused by noise in the grounds.

G. Provide zero phase calibration capability at 800 CPS and 3200 CPS.

H. Provide variable phase shift capability of the reference signal.

II. AUTHORITY

This retrofit is authorized by NECP-A8.

Sheet 3 of 10
Part No. 1021263
Date: 20 OCT. 64
TDRR 13810
Revision ______

III. UNITS AFFECTED

Name	Part Number	Retrofit S/N's	New P/N or Mod Mark
Oscillograph Console Assy	1900000-011	ACSK 1 thru 14	None
Oscillograph Amplifier Assy	1900044-011	ACSK 1 thru 14	1900044-021
Oscillograph Amplifier Assy	1900045-011	ACSK 1 thru 14	1900045-021
Phase Sensitive Demodulator	1900068-011	All (4) Spares (No S/Ns)	1901755-011

IV. PRIORITY CHANGES

Urgent.

V. RELATED CHANGES

None.

VI. MATERIAL REQUIRED

A. For Oscillograph Console Assembly Retrofit

1. One (1) Retrofit Kit, P/N 1021244, for the retrofit of the Oscillograph Console Assembly, P/N 1900000-011, containing the following:

QTY	Nomenclature	P/N
1	Nameplate (for P/N 1900044-021)	1901304-150
1	Nameplate (for P/N 1900045-021)	1901304-151
8	Drive Screws (AN 535-00-4)	1897109-004
1	Retrofit Information Bulletin	1021263

Sheet 4 of 10
Part No. 1021263
Date: 20 OCT. 64
TDRR 13810
Revision ______

VI. MATERIAL REQUIRED (Contd.)

2. Materials and special tools required but not supplied in kit: None.

B. For Spare Phase Sensitive Demodulator Retrofit

1. One (1) Retrofit Kit, P/N 1021243, for the retofit of Spare Phase Sensitive Demodulator, P/N 1900068-011, containing the following:

QTY	Nomenclature	P/N
1	Retrofit Information Bulletin	1021263

2. Material and special tools required but not supplied in kit: None.

VII. PROCEDURE

A. Oscillograph Console Assembly Retrofit Procedure: Retrofit Oscillograph Console Assembly, P/N 1900000-011, using the following procedure.

NOTE: The Oscillograph Console Assembly retrofit consists of replacing the phase sensitive demodulators in the Oscillograph Amplifier Assemblies, P/N's 1900044-011 and 1900045-011, with modified demodulators, plus modification designation of the Oscillograph Amplifier Assemblies.

VII. PROCEDURE (Condt.)

1. Loosen two front panel mounted captive screws on each phase sensitive demodulator, P/N 1900068-011, and remove demodulator. There are four (4) each phase sensitive demodulators mounted in Oscillograph Amplifier Assembly, P/N 1900044-011 and two (2) each in Oscillograph Amplifier Assembly, P/N 1900045-011.
2. Pack the six (6) removed phase sensitive demodulators, P/N 1900068-011, for shipment in accordance with packing instructions contained in JDC 19536.
3. Ship the packaged phase sensitive demodulators as directed by ACSK Logistics Material Control. NOTE: "THE PHASE SENSITIVE DEMODULATORS P/N 1900068-011 SHALL BE MODIFIED TO P/N 1901755-011."

VII. PROCEDURE (Contd.)

4. Examine the replacement phase sensitive demodulators for evidence of modification (P/N 1901755-011 should be stenciled on the rear of the demodulator under the MASSA nameplate). Examine the accompanying paperwork to assure that the demodulators have passed inspection by AC Spark Plug ~~Quality Assurance~~ as detailed in Part C of this procedure.

5. Install the replacement phase sensitive demodulators, P/N 1901755-011, in the Oscillograph Amplifier Assemblies; four (4) each in Amplifier Assembly, P/N 1900044, and two (2) each in Amplifier Assembly, P/N 1900045.

6. Make the modification designations as described in Sections VIII.A and VIII.B of this RIB.

7. Successful completion of the above steps indicates proper modification of the Oscillograph Console Assembly.

B. Spare Phase Sensitive Demodulator Retrofit Procedure: Retrofit spare phase sensitive demodulators, P/N 1900068-011, using the following procedure.

1. Pack the spare phase sensitive demodulator, P/N 1900068-011, for shipment in accordance with packing instructions contained in JDC 19536.

VII. PROCEDURE (Contd.)

2. Ship the packaged phase sensitive demodulator as directed by ACSK Logistics Material Control. NOTE: "THE PHASE SENSITIVE DEMODULATORS P/N 1900068-011 SHALL BE MODIFIED TO P/N 1901755-011.

3. Successful completion of the inspection tests specified in Part C of the procedure will indicate proper retrofit of the spare phase sensitive demodulator.

C. ACSK Inspection of Modified Phase Sensitive Demodulators: The modified phase sensitive demodulators, P/N 1901755-011, will be inspected by AC Spark Plug using the following procedure.

VII. PROCEDURE (Contd.)

1. Unpack modified phase sensitive demodulators, P/N 1901755-011, and inspect for signs of physical damage.

2. Test the modified phase sensitive demodulators to the requirements specified in PS 1901755.

3. Check the modification designations on the phase sensitive demodulators in accordance with the instructions described in Section VIII.C of this RIB.

4. Successful completion of the above steps indicates proper retrofit of the phase sensitive demodulators, new P/N 1901755-011.

5. Ship or transfer the accepted phase sensitive demodulators to locations designated by ACSK Logistics (Dept. 38-09).

VIII. MODIFICATION DESIGNATION

A. For Oscillograph Amplifier Assembly, P/N 1900044.

Modification designation of the Oscillograph Amplifier Assembly, old P/N 1900044-011, consisting of a part number change and a revision letter change, is accomplished as follows:

VIII. MODIFICATION DESIGNATION (Contd.)

1. Remove new nameplate, P/N 1901304-150, from the kit and stamp the serial number and contract number from the existing nameplate in characters .06 inch high, on the new nameplate.
2. Remove the old nameplate from the Oscillograph Amplifier Assembly, and replace with the new nameplate. Attach the new nameplate utilizing the four (4) drive screws, P/N 1897109-004, from the retrofit kit.
3. Remove the old "REV____" marking from the Oscillograph Amplifier Assembly Chassis and replace with "REV____." This marking is located above the nameplate and may be removed using lacquer thinner. Mark New "REV____" in letters .12 inches high, color black, per ND 1002019, above the nameplate.

B. For Oscillograph Amplifier Assembly, P/N 1900045. Modification designation of the Oscillograph Amplifier Assembly, old P/N 1900044-011, consisting of a part number change and a revision letter change, is accomplished as follows:

1. Remove new nameplate, P/N 1901304-151, from the kit and stamp the serial number and contract number from the existing nameplate in characters .06 inch high on the new nameplate.

VIII. MODIFICATION DESIGNATION (Contd.)

2. Remove the old nameplate from the Oscillograph Amplifier Assembly, and replace with the new nameplate. Attach the new nameplate utilizing the four (4) drive screws, P/N 1897109-004, from the retrofit kit.
3. Remove the old "REV____" marking from the Oscillograph Amplifier Assembly Chassis and replace with "REV____." This marking is located above the nameplate and may be removed using lacquer thinner. Mark new "REV____" in letters .12 inches high, color black, per ND 1002019, above the nameplate.

C. For Phase Sensitive Demodulator, Old P/N 1900068.

Modification designation of the phase sensitive demodulators, old P/N 1900068-011, consisting of a part number change and a revision letter change,

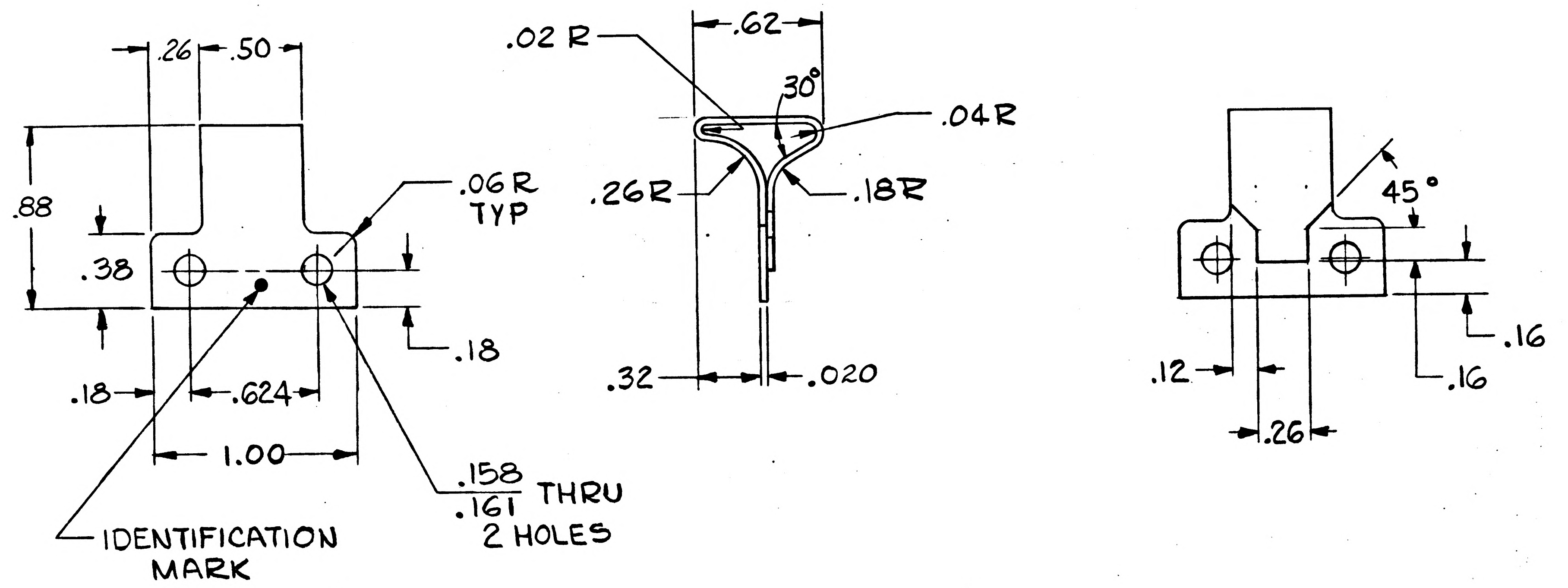
IX. DISPOSITION OF REMOVED PARTS

Scrap.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: BERYLLIUM COPPER PER QQ-C-533, COND 1/2 HARD.
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. HEAT TREAT: *PRECIPITATION HARDEN PER MIL-H-7199.*
5. FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS I, .0004 TO .0007 THICK.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.

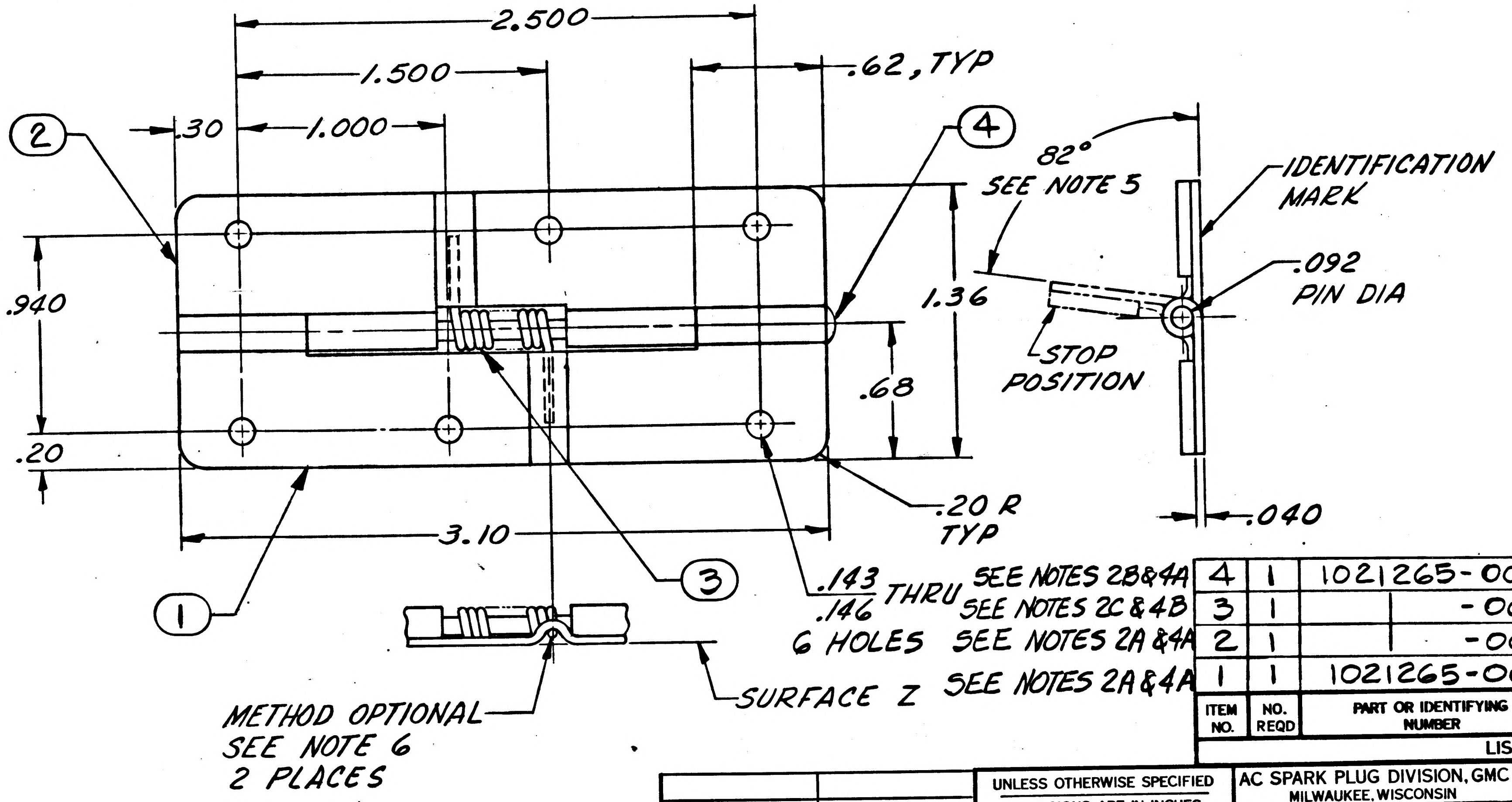


		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±2°	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWG. NO. CONTRACT DRAWN Orzel DATE 27 DEC 65 CHECKED Ed Foster 15 JAN 66 APPROVAL E. Lemkul 15 JAN 66 CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS *SPRING, TENSION*
1021314	1021255-021	DO NOT SCALE THIS DRAWING	A. C. METZGER	SIZE C
1021314	1021255-011	MATERIAL SEE NOTE 2	NASA APPROVAL 1/18/66	CODE IDENT NO. 80230
NEXT ASSY	USED ON		MIT APPROVAL	1021264
APPLICATION		APPROVAL		SCALE 2:1 SHEET OF 1

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL:
   - A. AL ALY PER QQ-A-250/8, TEMPER H34 (AL ALY 5052).
   - B. AL ALY PER QQ-A-225/5, TEMPER T4 (AL ALY 2017).
   - C. SST PER QQ-W-423, COMP 302 OR 304, COND B.
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. FINISH:
   - A. ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
   - B. PASSIVATE PER MIL-F-14072 (SIG C) FINISH E-300.
5. HINGE TO BE SPRING LOADED WITH A 3 TO 5 IN LB TORQUE AT 82° STOP POSITION.
6. SPRING WIRE MUST NOT PROTRUDE BELOW SURFACE Z.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. USE "RIVET" METHOD OF PIN RETENTION.


2.500
1.500
.30
1.000
.62, TYP
②
④
82°
SEE NOTE 5
IDENTIFICATION MARK
.092 PIN DIA
STOP POSITION
.940
1.36
.68
.20
.20 R TYP
.040
3.10
①
③
.143 / .146 THRU
6 HOLES
SURFACE Z
METHOD OPTIONAL SEE NOTE 6 2 PLACES
SEE NOTES 2B&4A
SEE NOTES 2C & 4B
SEE NOTES 2A &4A
SEE NOTES 2A & 4A

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
4	1	1021265-004	PIN
3	1	-003	SPRING
2	1	-002	RIGHT LEAF
1	1	1021265-001	LEFT LEAF

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ _	±.005	+ 1°
-	±.02	-

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN

ACSP PN

DRAWN C. M. Kulp DATE 2 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lenkeit 15 JAN 66
APPROVAL R.H. 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

HINGE, BUTT
(INSEPARABLE ASSEMBLY)

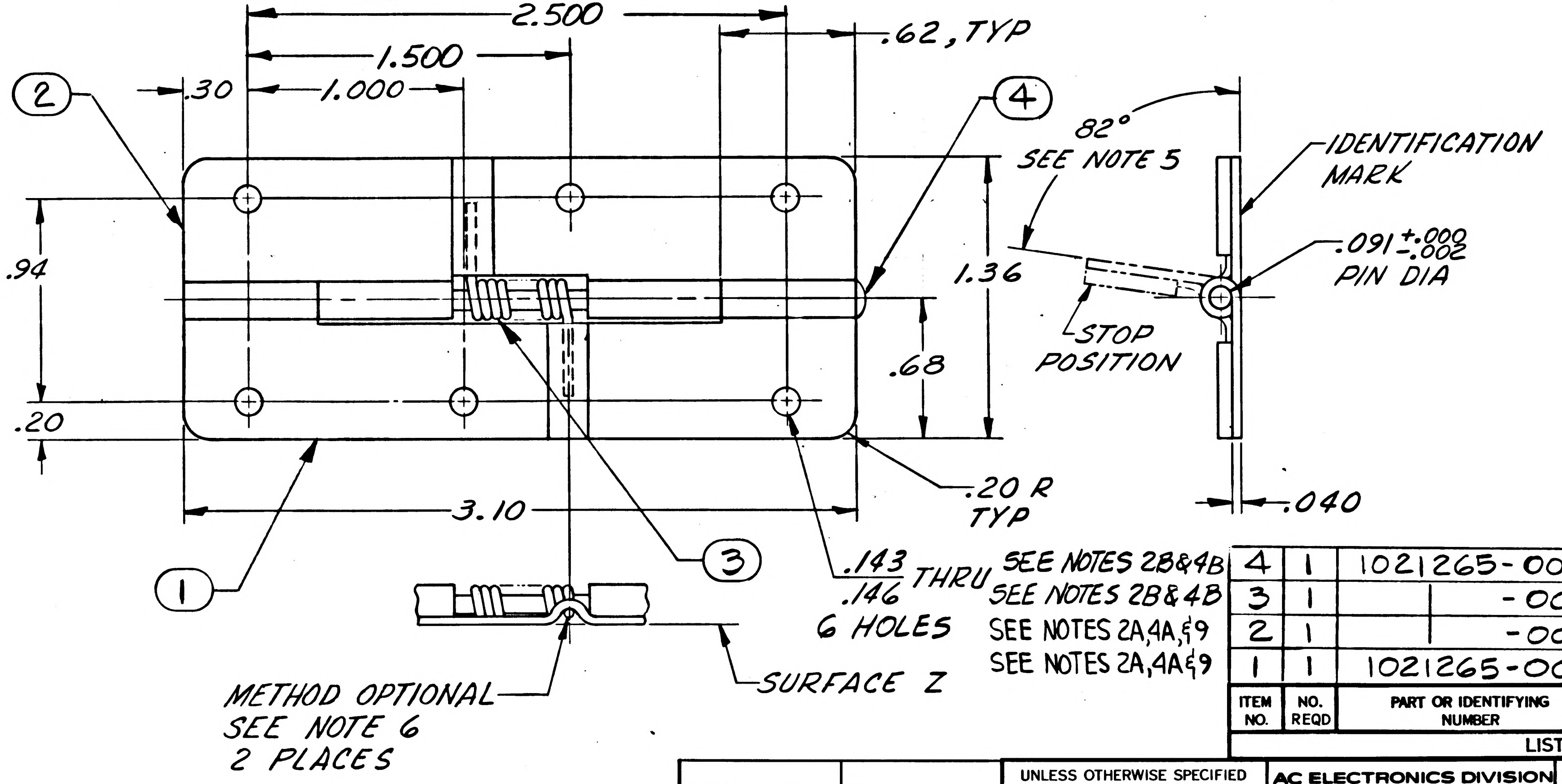
CODE IDENT NO.	SIZE	
80230	C	1021265
SCALE 2/1		SHEET 1 OF 1

MIL 1077C—P

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL:
   A. AL ALY PER QQ-A-250/8, TEMPER H34 (AL ALY 5052).
   ~~B. AL ALY PER QQ-A-225/5, TEMPER T4 (AL ALY 2017).~~
   B SST PER QQ-W-423, COMP 302 OR 304, COND B.
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. FINISH:
   A. ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
   B. PASSIVATE PER MIL-F-14072 (SIG C) FINISH E-300.
5. HINGE TO BE SPRING LOADED WITH A 1 TO 3 IN LB TORQUE AT 82° STOP POSITION.
6. SPRING WIRE MUST NOT PROTRUDE BELOW SURFACE Z.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. USE "STAKE" METHOD OF PIN RETENTION.
9. ITEMS ① AND ② MAY BE MADE FROM MS-35822-7A.

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 26903		11 MAR 66	RLP



2.500
1.500
1.000
.30
.62, TYP
②
④
82°
SEE NOTE 5
IDENTIFICATION MARK
.091 +.000 -.002 PIN DIA
STOP POSITION
.94
1.36
.68
.20
.20 R TYP
.040
3.10
①
③
.143 THRU .146
6 HOLES
METHOD OPTIONAL SEE NOTE 6 2 PLACES
SURFACE Z

SEE NOTES 2B&4B	4	1	1021265-004	PIN
SEE NOTES 2B&4B	3	1	-003	SPRING
SEE NOTES 2A,4A&9	2	1	-002	RIGHT LEAF
SEE NOTES 2A,4A&9	1	1	1021265-001	LEFT LEAF
	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	±.005	+ 1°
−	±.02	−

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.

DRAWN C. M. Kulp DATE 2 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkuil 15 JAN 66
APPROVAL R.H. Bean 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

HINGE, BUTT
(INSEPARABLE ASSEMBLY)

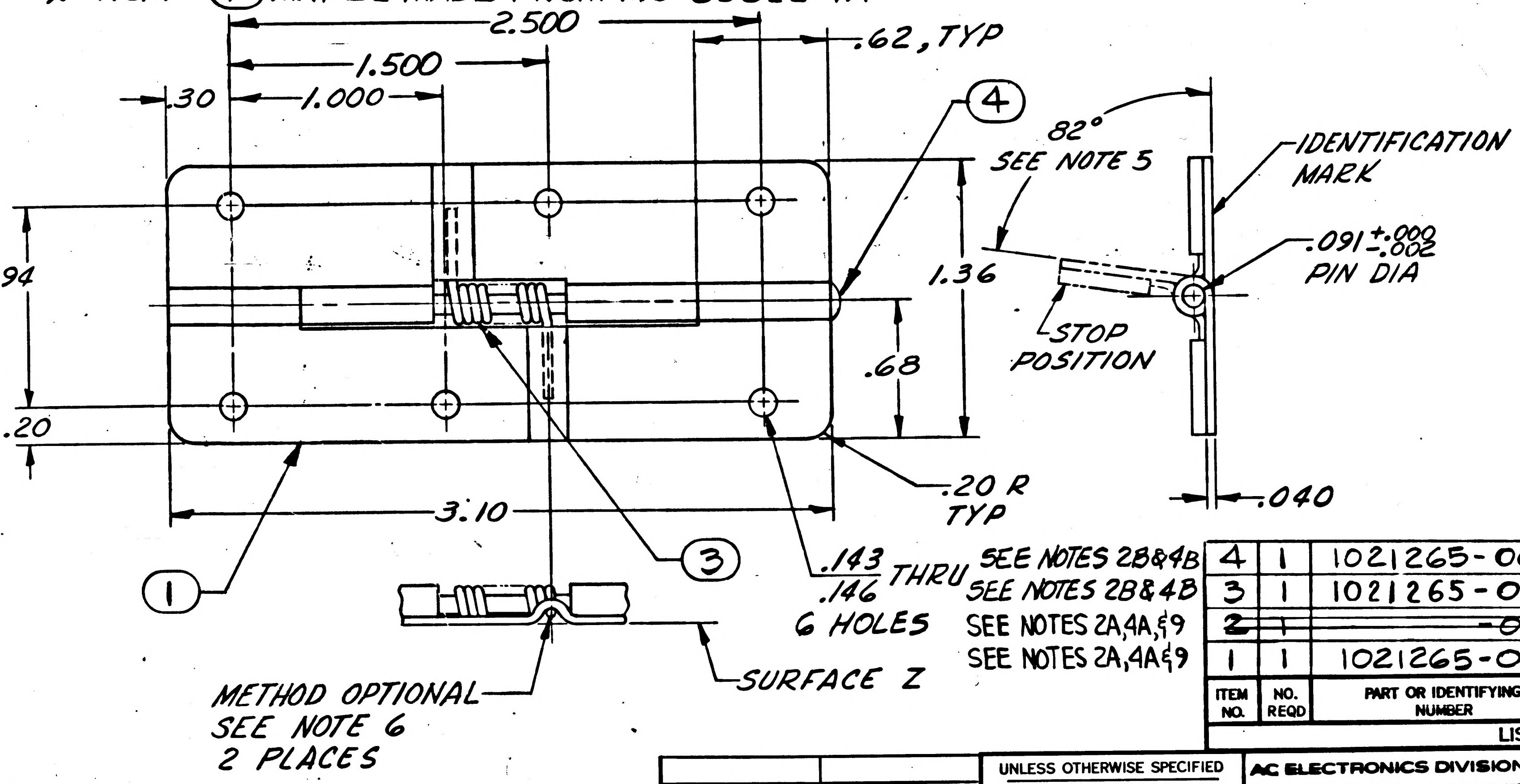
CODE IDENT NO. 80230
SIZE C
1021265
SCALE 2/1
SHEET 1 OF 1

MIL 1077C—P

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL:
   A. AL ALY PER QQ-A-250/8, TEMPER H34 (AL ALY 5052).
   B. SST PER QQ-S-763, COMP 303 OR 303SE, COND A.
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. FINISH:
   A. ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
   B. PASSIVATE PER MIL-F-14072 (SIG C) FINISH E-300.
5. HINGE TO BE SPRING LOADED WITH A 1 TO 3 IN LB TORQUE AT 82° STOP POSITION.
6. SPRING WIRE MUST NOT PROTRUDE BELOW SURFACE Z.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. USE "STAKE" METHOD OF PIN RETENTION.
9. ITEM ① MAY BE MADE FROM MS-35822-7A

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 26903		11 MAR 66	RLP
C		REVISED PER TDRR 31237		29 SEP. 66	JM / JI



2.500
1.500
1.000
.30
.62, TYP
④
82°
SEE NOTE 5
IDENTIFICATION MARK
.091 +.000 -.002 PIN DIA
STOP POSITION
.94
1.36
.68
.20
3.10
.20 R TYP
.040
①
③
.143 / .146 THRU
6 HOLES
METHOD OPTIONAL
SEE NOTE 6
2 PLACES
SURFACE Z

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTES 2B&4B	4	1	1021265-004	PIN
SEE NOTES 2B&4B	3	1	1021265-003	HINGE, BUTT
	~~2~~	~~1~~	~~-002~~	~~RIGHT LEAF~~
SEE NOTES 2A,4A,&9	1	1	1021265-001	HINGE, BUTT

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	±.005	+ 1°
−	±.02	−

DO NOT SCALE THIS DRAWING

MATERIAL

CONTRACT NAS 9-497

AC ELECTRONICS DIVISION
~~GENERAL MOTORS CORP.~~ MILWAUKEE WIS.

DRAWN C. M. Kulp DATE 2 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lenkuil 15 JAN 66
APPROVAL R.H. [illegible] 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

HINGE, BUTT
(INSEPARABLE ASSEMBLY)

CODE IDENT NO.	SIZE	
80230	C	1021265

SCALE 2/1

SHEET 1 OF 1

1021265

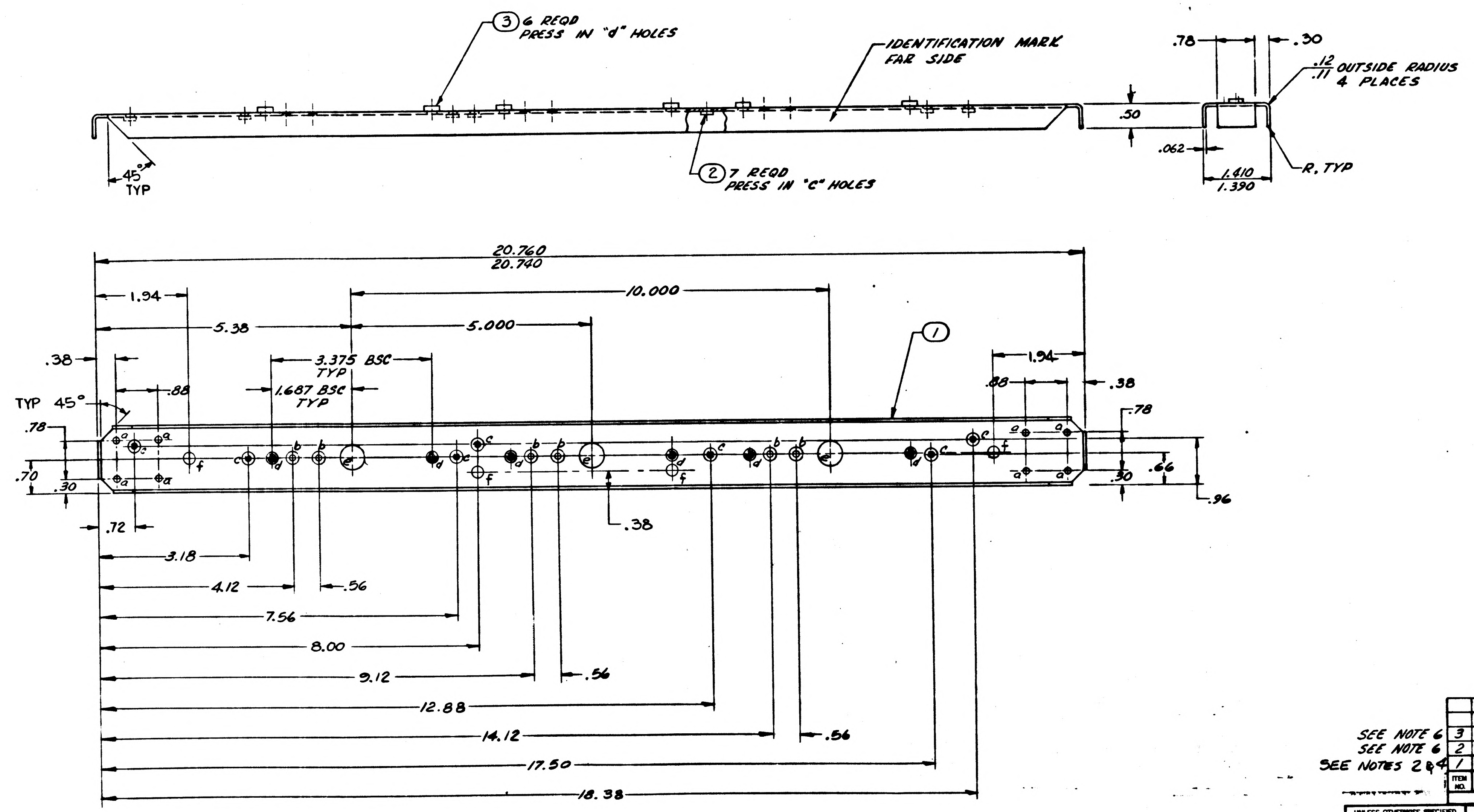
MIL 1077C—P

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321		-	

NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
7. DO NOT REMOVE SHARP EDGES FROM HOLES THAT RECEIVE INSERTS.

HOLE	QTY	DESCRIPTION
a	8	.129 - .132 DIA THRU
b	6	.129 - .132 DIA THRU, CSK 100° TO .234 DIA
c	7	.166 - .169 DIA THRU
d	6	.1875 - .1905 DIA THRU ⊕ .010 DIA
e	3	.50 DIA THRU
f	4	.26 DIA THRU


③ 6 REQD
PRESS IN "d" HOLES
IDENTIFICATION MARK
FAR SIDE
② 7 REQD
PRESS IN "C" HOLES
45°
TYP
.50
.062
.78
.30
.12
.11 OUTSIDE RADIUS
4 PLACES
1.410
1.390
R, TYP
20.760
20.740
10.000
1.94
5.38
5.000
.38
3.375 BSC
TYP
1.687 BSC
TYP
.88
①
TYP 45°
.78
.70
.30
.72
.38
.66
.96
3.18
4.12
.56
7.56
8.00
9.12
.56
12.88
14.12
.56
17.50
18.38
a
b
c
d
e
f

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 6	3	6	1010861-11	NUT, PLAIN, CLINCH
SEE NOTE 6	2	7	1010861-7	NUT, PLAIN, CLINCH
SEE NOTES 2 & 4	1	1	1021266-001	PANEL, ANNUNCIATOR

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — −
DECIMALS ±.005 ±.02
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN C. M. Kopf DATE 6 DEC 65
CHECKED Ed Epstein 15 JAN 66
APPROVAL E. Lambert 15 JAN 66
APPROVAL R. W. Bass 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

PANEL, ANNUNCIATOR
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE E
1021266
SCALE FULL
SHEET 1 OF 1

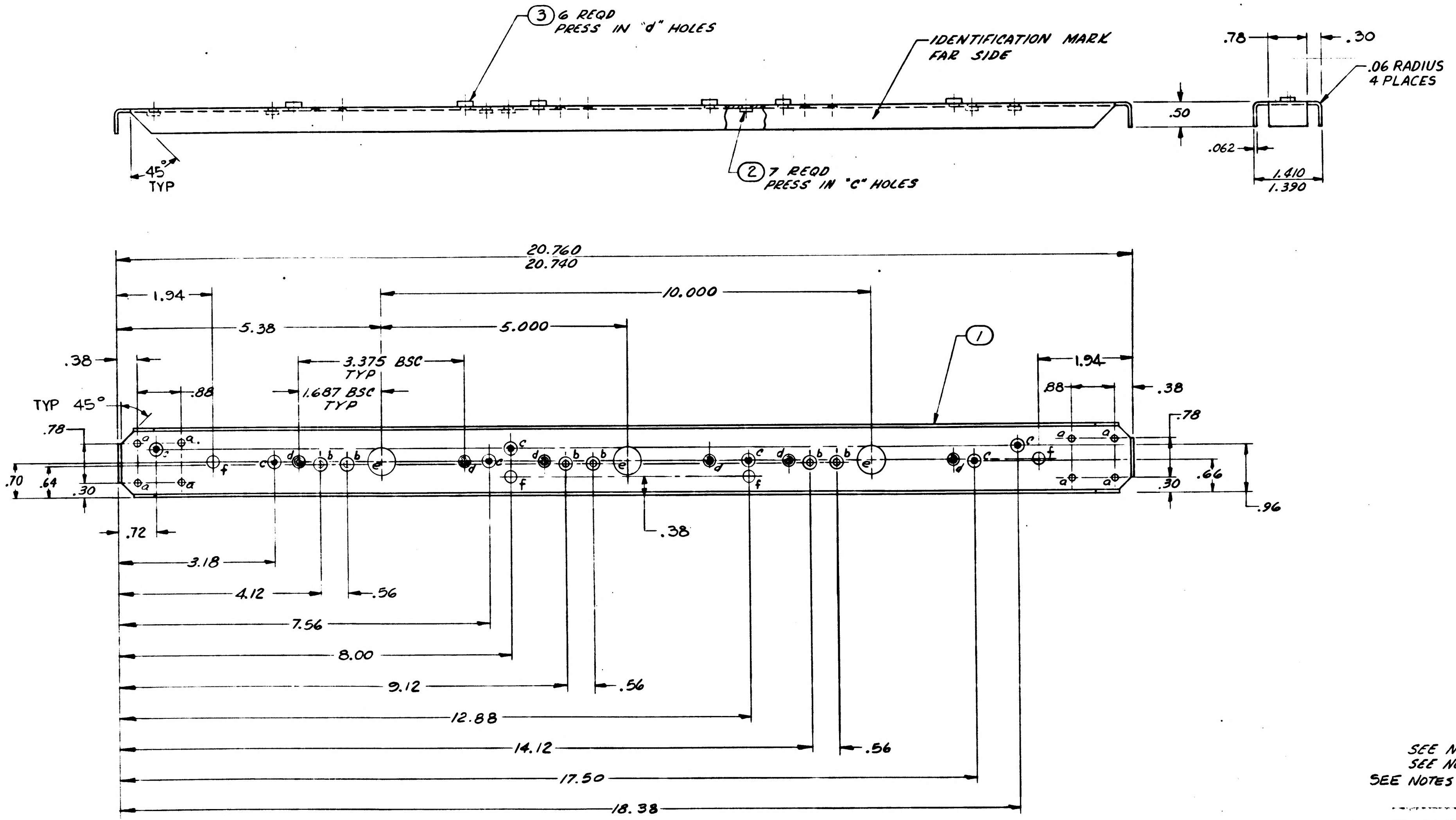
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. VENDOR ITEM-SEE SPECIFICATION CONTROL DRAWING.
7. DO NOT REMOVE SHARP EDGES FROM HOLES THAT RECEIVE INSERTS.

HOLE	QTY	DESCRIPTION
a	8	.129 -.132 DIA THRU
b	6	.129 -.132 DIA THRU, CSK 100° TO .234 DIA
c	7	.166 -.169 DIA THRU
d	6	.1875-.1905 DIA THRU ⊕ .010 DIA
e	3	.562 DIA THRU
f	4	.26 DIA THRU

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR			
	B	REVISED PER TDRR 26896		15 MAR 66	LK



③ 6 REQD PRESS IN "d" HOLES
IDENTIFICATION MARK FAR SIDE
② 7 REQD PRESS IN "C" HOLES
45° TYP
.50
.062
.78
.30
.06 RADIUS 4 PLACES
1.410
1.390
20.760
20.740
1.94
10.000
5.38
5.000
①
.38
3.375 BSC TYP
1.687 BSC TYP
.88
1.94
.88
.38
TYP 45°
.78
.78
.70
.64
.30
.30
.66
.96
.72
.38
3.18
4.12
.56
7.56
8.00
9.12
.56
12.88
14.12
.56
17.50
18.38
a
b
c
d
e
f

SEE NOTE 6	3	6	1010861-11	NUT, PLAIN, CLINCH
SEE NOTE 6	2	7	1010861-7	NUT, PLAIN, CLINCH
SEE NOTES 2 & 4	1	1	1021266-001	PANEL, ANNUNCIATOR
	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − | DECIMALS ±.005 ±.02 | ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN C. M. Kufo DATE 6 DEC 65
CHECKED 5 JAN 66
APPROVAL 15 JAN 66
APPROVAL 1/18/66
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

PANEL, ANNUNCIATOR
(INSEPARABLE ASSEMBLY)

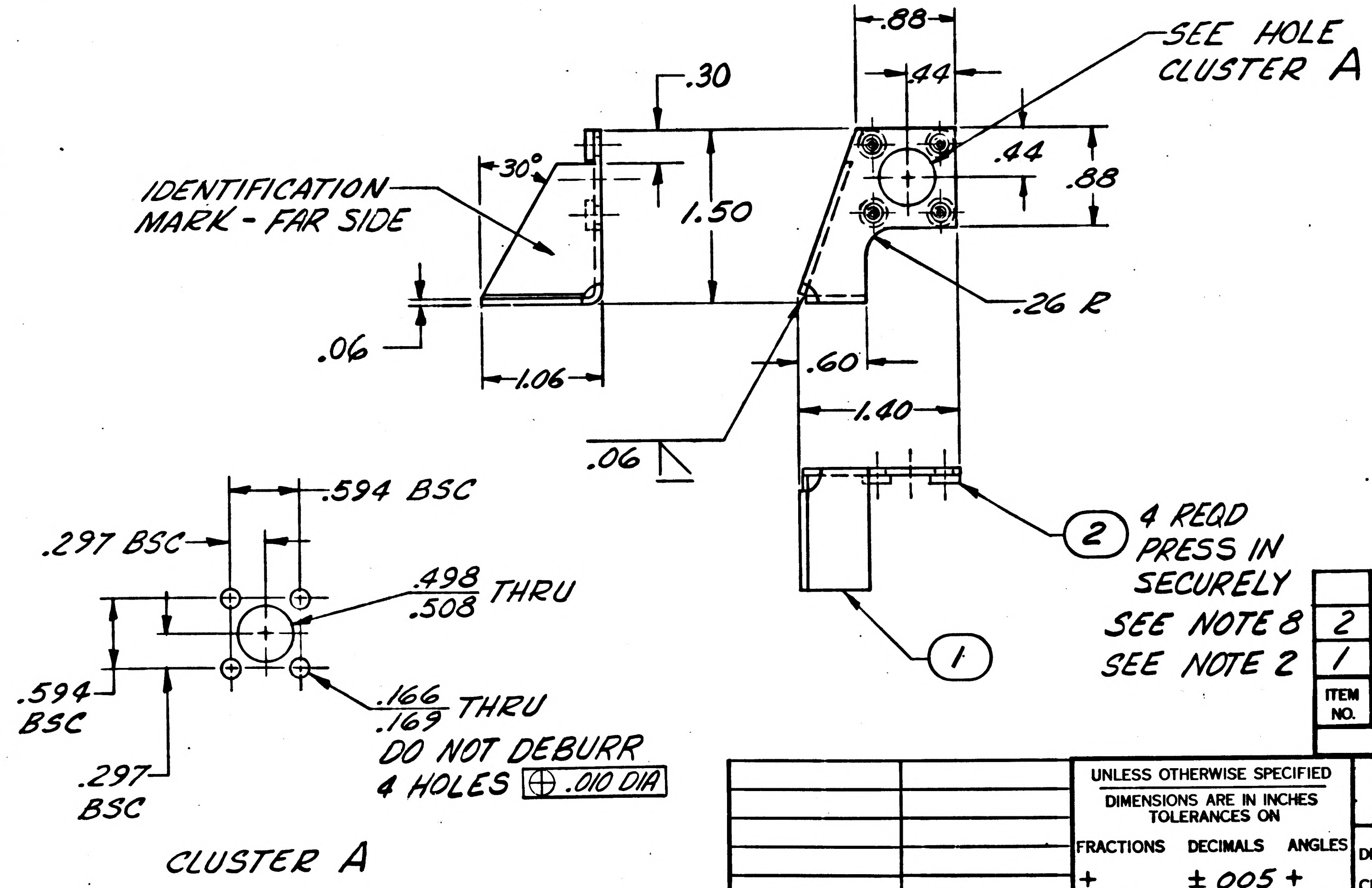
CODE IDENT NO. 80230
SIZE E
1021266
SCALE FULL
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. WELD PER MIL-W-8604.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
6. INSIDE BEND RADII = .06 R
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.

REVISIONS

SYM	ZONE	DESCRIPTION		DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321	CHG NO.		/



.88
.44
.30
SEE HOLE CLUSTER A
30°
.44
.88
IDENTIFICATION MARK - FAR SIDE
1.50
.26 R
.06
1.06
.60
1.40
.06
②
4 REQD PRESS IN SECURELY
①
.594 BSC
.297 BSC
.498
.508 THRU
.594 BSC
.297 BSC
.166
.169 THRU
DO NOT DEBURR 4 HOLES ⊕ .010 DIA

CLUSTER A

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 8	2	4	1010861-7	NUT, PLAIN, CLINCH
SEE NOTE 2	1	1	1021267-001	BRACKET, CONNECTOR

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.005	+
-	±.02	-

DO NOT SCALE THIS DRAWING

MATERIAL —

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DWG. NO. CONTRACT

DRAWN C. M. Kulo DATE 7 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lembuel 15 JAN 66
APPROVAL R.W. Buss 1/18/66

NASA APPROVAL A. C. METZGER

MIT APPROVAL W Kupfer 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

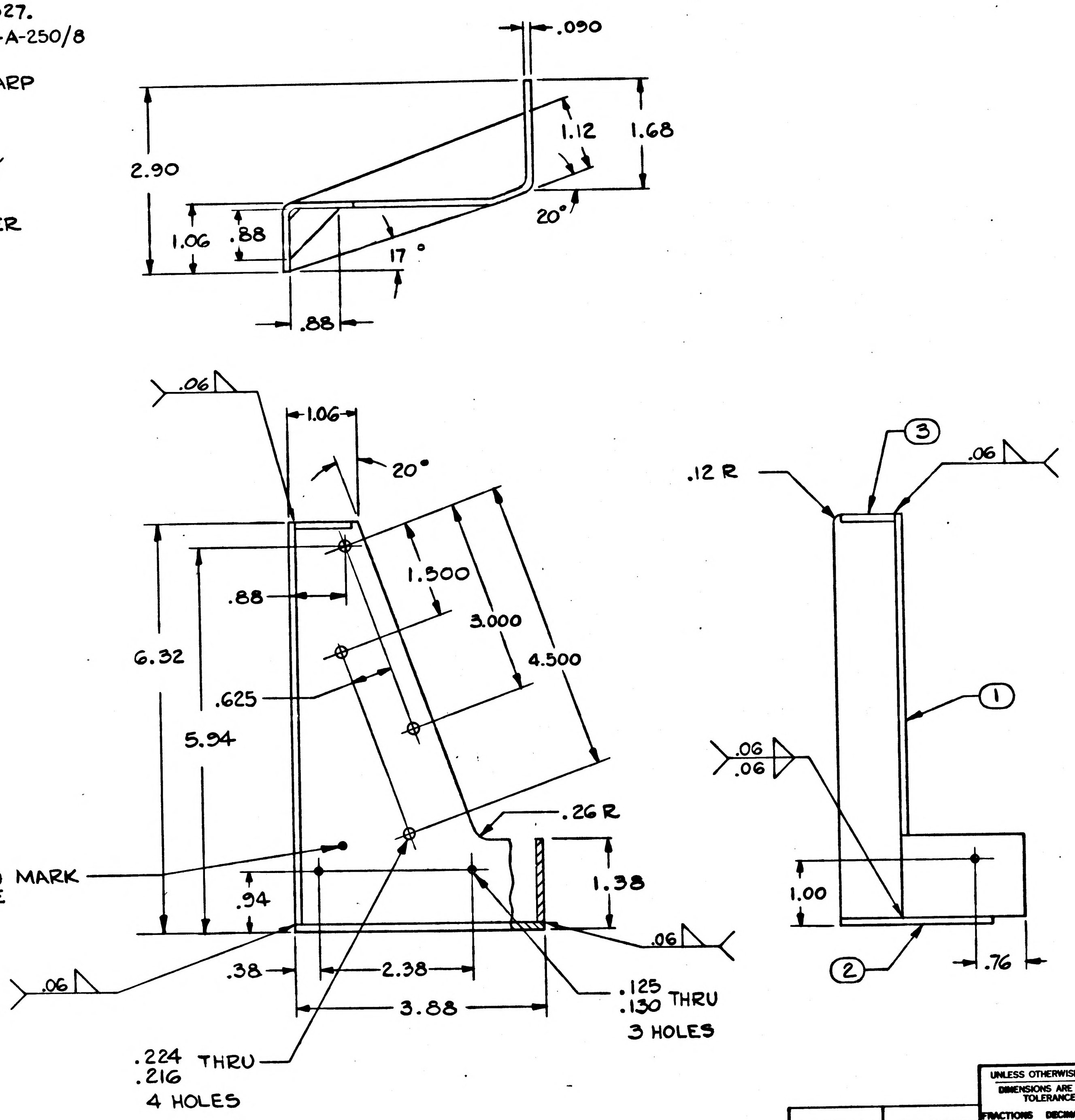
BRACKET, ELECTRICAL CONNECTOR
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230 SIZE C 1021267

SCALE FULL SHEET 1 OF 1

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. WELD PER MIL-W-8604.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
6. ALL BEND RADII TO BE .12 R
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.


.090
2.90
1.12
1.68
1.06
.88
20°
17°
.88
.06
1.06
20°
1.500
3.000
4.500
.88
6.32
.625
5.94
.26 R
1.38
IDENTIFICATION MARK FAR SIDE
.94
.06
.06
.38
2.38
3.88
.125
.130 THRU
3 HOLES
.224 THRU
.216
4 HOLES
.12 R
3
.06
1
.06
.06
1.00
2
.76

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3	1	1021268-003	GUSSET
2	1	1021268-002	BASE
1	1	1021268-001	BRACKET

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
± —	±.005 ±.02	± 2°

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

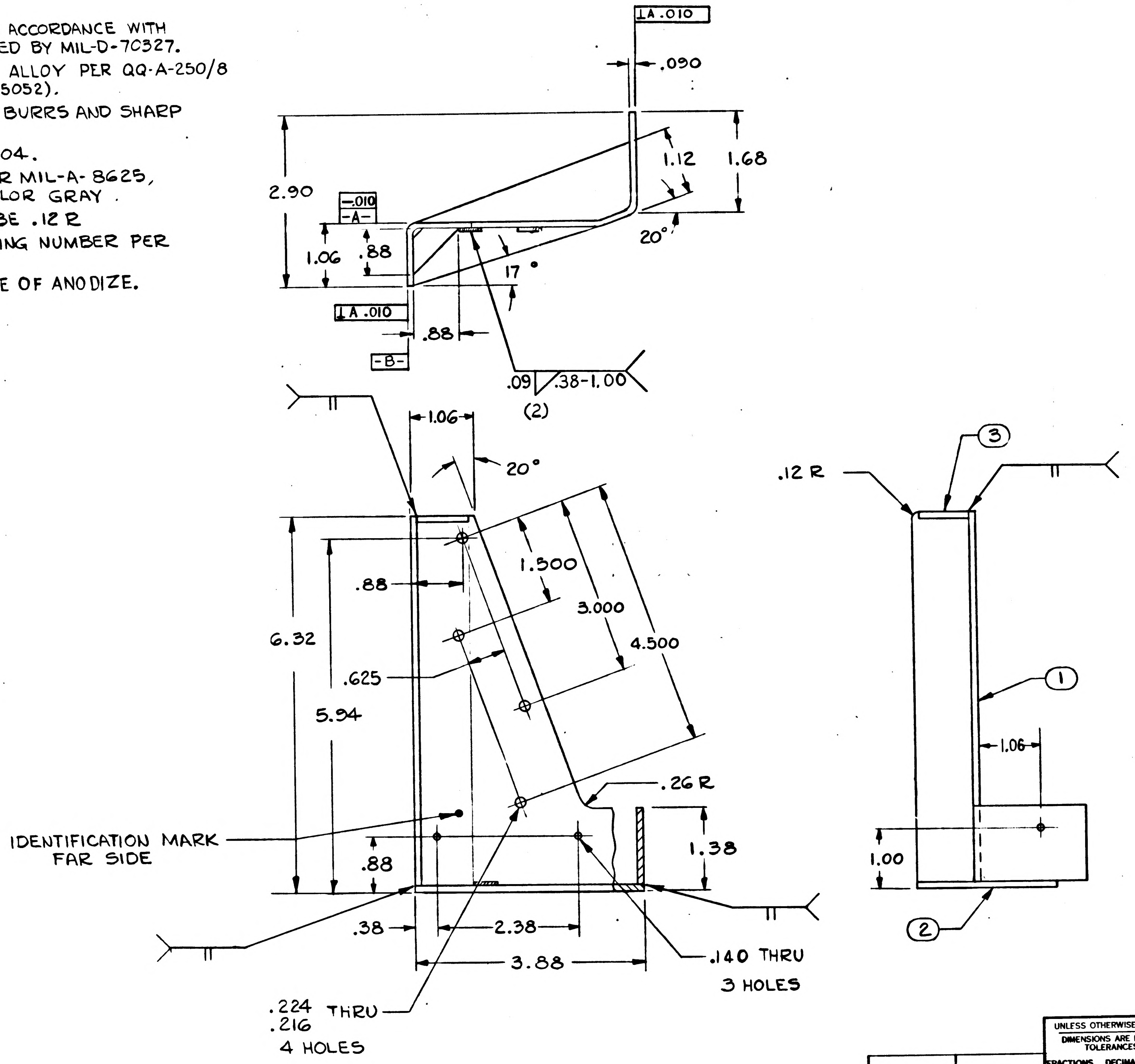
DRAWN Ozgel DATE 8 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkuil 15 JAN 66
APPROVAL 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, LH SUPPORT
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE D
1021268
SCALE FULL
SHEET 1 OF 1

NOTES :
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL : ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. WELD PER MIL-W-8604.
5. FINISH : ANODIZE PER MIL-A-8625, TYPE II, CLASS I, COLOR GRAY.
6. ALL BEND RADII TO BE .12 R
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. SURFACE "B" TO BE FREE OF ANODIZE.


⊥A .010
.090
2.90
1.12
1.68
-.010
-A-
1.06
.88
20°
17°
⊥A .010
.88
-B-
.09
.38-1.00
(2)
1.06
20°
.12 R
③
1.500
.88
3.000
6.32
4.500
.625
①
5.94
1.06
.26 R
1.38
IDENTIFICATION MARK FAR SIDE
1.00
.88
②
.38
2.38
3.88
.140 THRU
3 HOLES
.224
.216 THRU
4 HOLES

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			
	B	REVISED PER TDRR 26907		18 MAR 66	R.N.T.

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3	1	1021268-003	GUSSET
2	1	1021268-002	BASE
1	1	1021268-001	BRACKET

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
± —	±.005 ±.02	± 1°

DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Orzel DATE 8 DEC 65
CHECKED Foster 15 JAN 66
APPROVAL Lempuil 15 JAN 66
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

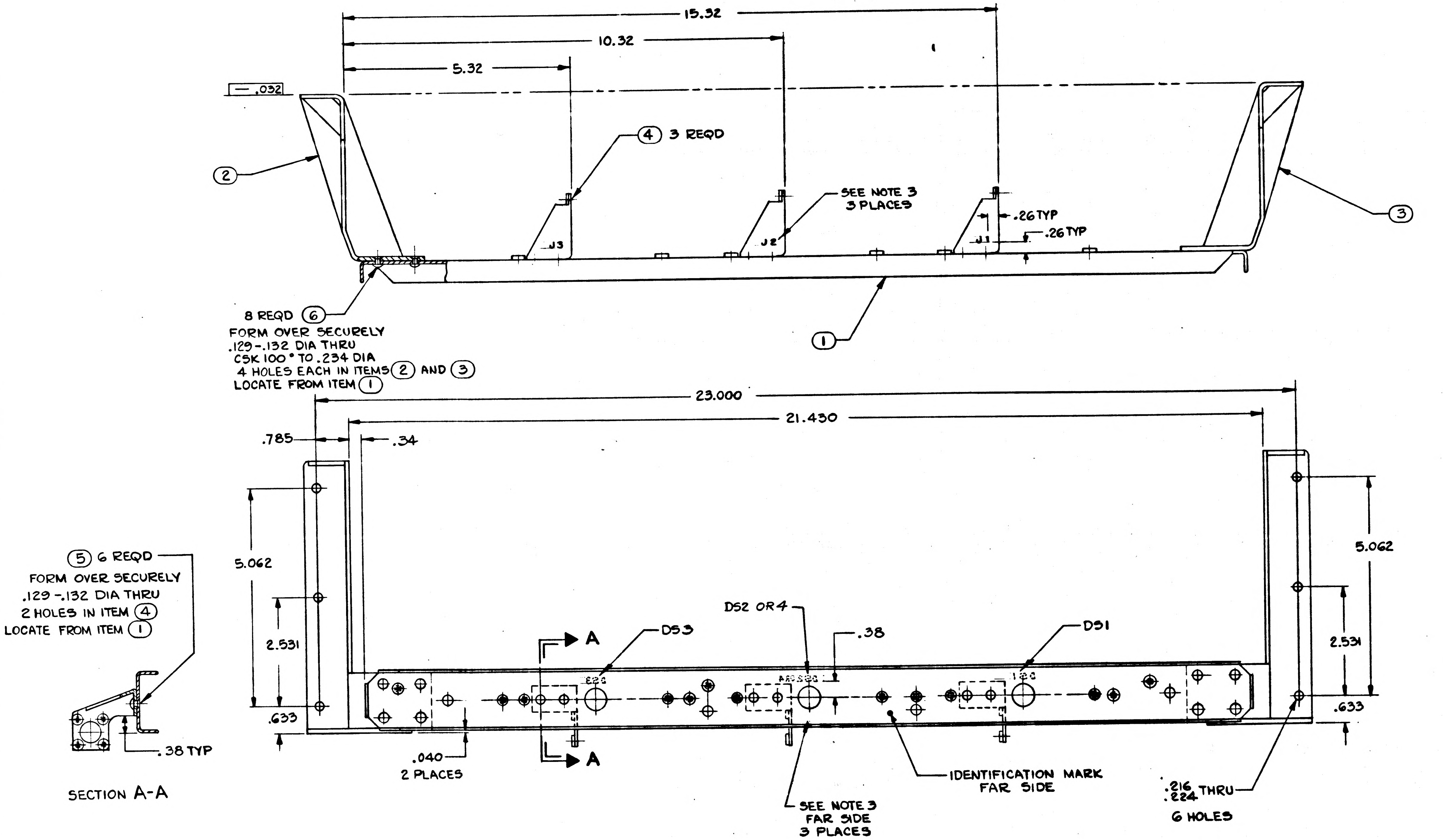
BRACKET, LH SUPPORT
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE D
1021268
SCALE FULL
SHEET 1 OF 1

1021268 B

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND1002019.
3. MARK CHARACTERS .12 HIGH, COLOR BLACK PER ND1002019, LOCATE AS SHOWN.
4. RIVET HOLES AND C'SINKS TO BE FREE OF ANODIZE TO PROVIDE ELECTRICAL GROUND PATH.


15.32
10.32
5.32
.032
④ 3 REQD
②
③
SEE NOTE 3
3 PLACES
.26 TYP
.26 TYP
J3
J2
J1
①
8 REQD ⑥
FORM OVER SECURELY
.129-.132 DIA THRU
CSK 100° TO .234 DIA
4 HOLES EACH IN ITEMS ② AND ③
LOCATE FROM ITEM ①
23.000
21.430
.785
.34
5.062
2.531
.633
5.062
2.531
.633
⑤ 6 REQD
FORM OVER SECURELY
.129-.132 DIA THRU
2 HOLES IN ITEM ④
LOCATE FROM ITEM ①
.38 TYP
SECTION A-A
A
A
DS3
DS2 OR4
.38
DS1
.040
2 PLACES
SEE NOTE 3
FAR SIDE
3 PLACES
IDENTIFICATION MARK
FAR SIDE
.216
.224 THRU
6 HOLES

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
6	8	MS20426A4-6	RIVET, 100° CSK
5	6	MS20426A4-5	RIVET, 100° CSK
4	3	1021267	BRACKET, ELEC CONN. (INSEP. ASSY
3	1	1021274	BRACKET, RH SUPPORT (INSEP ASSY
2	1	1021268	BRACKET, LH SUPPORT (INSEP ASSY
1	1	1021266	PANEL, ANNUNCIATOR (INSEP ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021272-021	1021255-021
1021272-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − DECIMALS ±.005 ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Orgel DATE 2 DEC 65
CHECKED Foster 15 JAN 66
APPROVAL E. Tompuit 15 JAN 66
APPROVAL
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

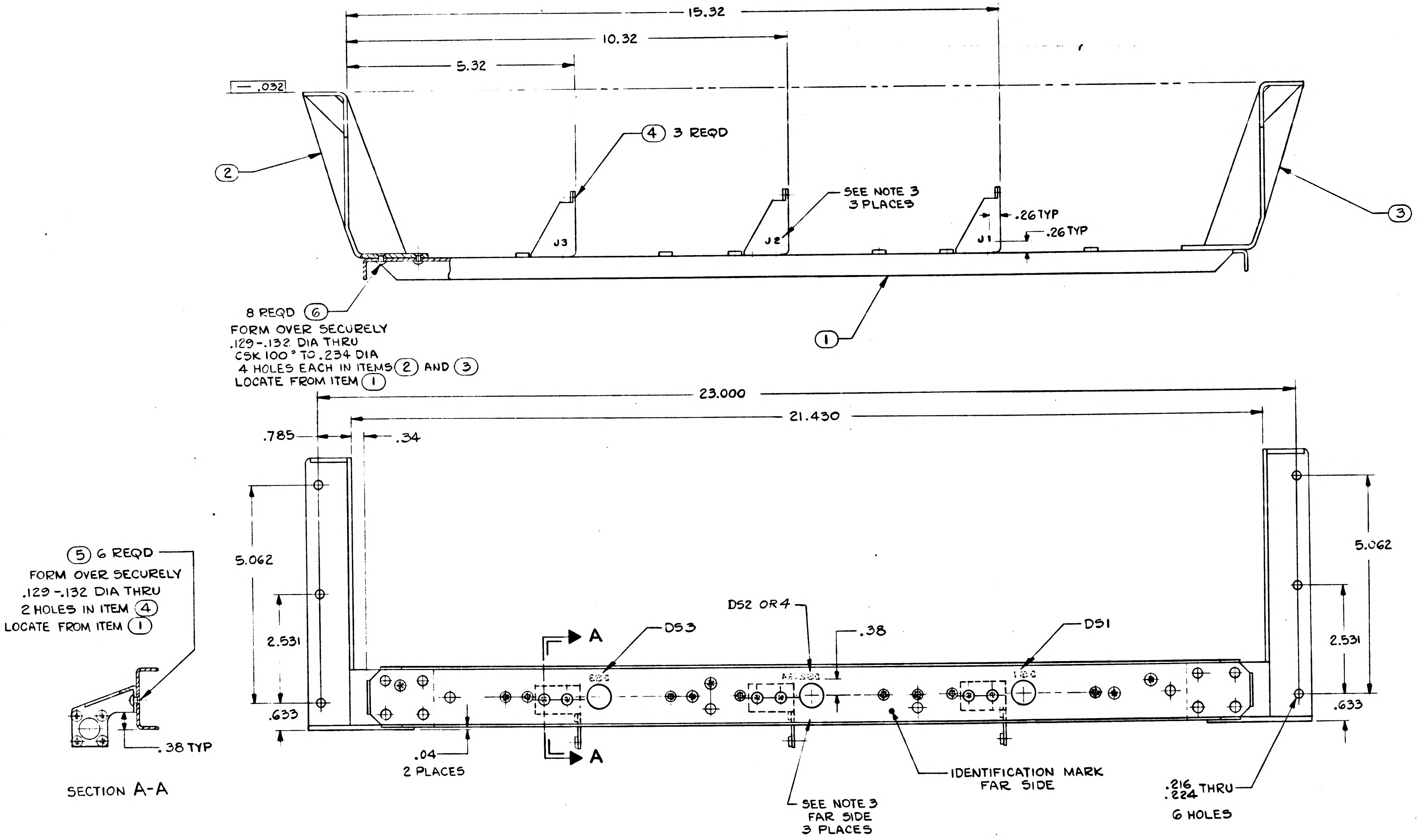
SUPPORT, ANNUNCIATOR PANEL
AND EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE E
1021269
SCALE FULL
SHEET 1 OF

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR			
	B	REVISED PER TDRR 26897		16 [illegible] 66	[illegible]

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND1002019.
3. MARK CHARACTERS .12 HIGH, COLOR BLACK PER ND1002019, LOCATE AS SHOWN.
4. RIVET HOLES AND C'SINKS TO BE FREE OF ANODIZE TO PROVIDE ELECTRICAL GROUND PATH.
5. CHEMICAL FILM FINISH PER MIL-C-5541 SHALL BE APPLIED TO ALL RIVETS AND EXPOSED ALUMINUM SURFACES.


15.32
10.32
5.32
.032
②
④ 3 REQD
SEE NOTE 3
3 PLACES
J3
J2
J1
.26 TYP
.26 TYP
③
8 REQD ⑥
FORM OVER SECURELY
.129-.132 DIA THRU
CSK 100° TO .234 DIA
4 HOLES EACH IN ITEMS ② AND ③
LOCATE FROM ITEM ①
①
23.000
21.430
.785
.34
5.062
2.531
.633
⑤ 6 REQD
FORM OVER SECURELY
.129-.132 DIA THRU
2 HOLES IN ITEM ④
LOCATE FROM ITEM ①
.38 TYP
SECTION A-A
A
A
DS3
DS2 OR 4
.38
DS1
.04
2 PLACES
SEE NOTE 3
FAR SIDE
3 PLACES
IDENTIFICATION MARK
FAR SIDE
.216
.224 THRU
6 HOLES
5.062
2.531
.633

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
6	8	MS20426AD4-6	RIVET, 100° CSK (1897065-206)
5	6	MS20426AD4-5	RIVET, 100° CSK (1897065-205)
4	3	1021267	BRACKET, ELEC CONN. (SEP ASSY)
3	1	1021274	BRACKET, RH SUPPORT (SEP ASSY)
2	1	1021268	BRACKET, LH SUPPORT (SEP ASSY)
1	1	1021266	PANEL, ANNUNCIATOR (SEP ASSY)

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021272-021	1021255-021
1021272-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Figel DATE 9 DEC 65
CHECKED [illegible] 15 JAN 66
APPROVAL [illegible] 15 JAN 66
APPROVAL [illegible]
NASA APPROVAL
MIT APPROVAL [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

SUPPORT, ANNUNCIATOR PANEL
AND EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

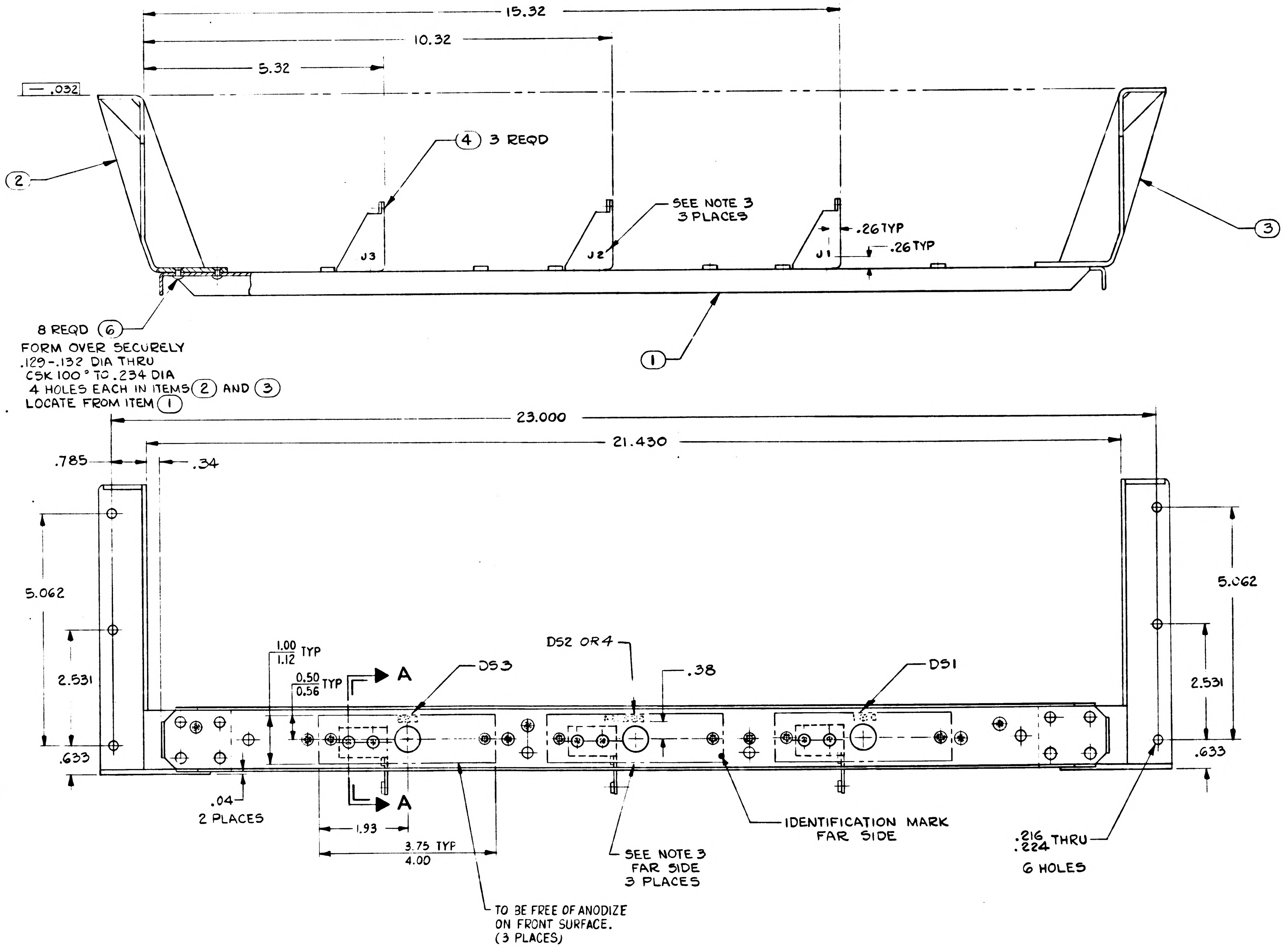
CODE IDENT NO 80230 SIZE E 1021269
SCALE FULL SHEET 1 OF 1

NOTES:

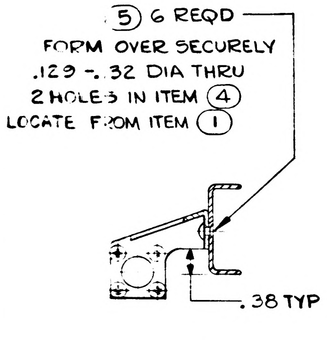
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND1002019.
3. MARK CHARACTERS .12 HIGH, COLOR BLACK PER ND1002019, LOCATE AS SHOWN.
4. RIVET HOLES AND C'SINKS TO BE FREE OF ANODIZE TO PROVIDE ELECTRICAL GROUND PATH.
5. CHEMICAL FILM FINISH PER MIL-C-5541 SHALL BE APPLIED TO ALL RIVETS AND EXPOSED ALUMINUM SURFACES.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR [illegible]			
	B	REVISED PER TDRR 26897		16 MAR 66	
	C	REVISED PER TDRR 28426		[illegible] 66	



15.32
10.32
5.32
— .032
④ 3 REQD
②
SEE NOTE 3
3 PLACES
③
J3
J2
J1
.26 TYP
.26 TYP
8 REQD ⑥
FORM OVER SECURELY
.129-.132 DIA THRU
CSK 100° TO .234 DIA
4 HOLES EACH IN ITEMS ② AND ③
LOCATE FROM ITEM ①
①
23.000
21.430
.785
.34
5.062
2.531
.633
1.00
1.12
TYP
0.50
0.56
TYP
A
A
DS3
DS2 OR 4
.38
DS1
5.062
2.531
.633
.04
2 PLACES
1.93
3.75 TYP
4.00
SEE NOTE 3
FAR SIDE
3 PLACES
IDENTIFICATION MARK
FAR SIDE
.216
.224 THRU
6 HOLES
TO BE FREE OF ANODIZE
ON FRONT SURFACE.
(3 PLACES)



⑤ 6 REQD
FORM OVER SECURELY
.129 - .132 DIA THRU
2 HOLES IN ITEM ④
LOCATE FROM ITEM ①
.38 TYP

SECTION A-A

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
6	8	MS20426AD4-6	RIVET, 100° CSK (897065-206)
5	6	MS20426AD4-5	RIVET, 100° CSK (897065-205)
4	3	1021267	BRACKET, ELEC CONN. (INSEP. ASSY)
3	1	1021274	BRACKET, RH SUPPORT (INSEP ASSY
2	1	1021268	BRACKET, LH SUPPORT (INSEP ASSY
1	1	1021266	PANEL, ANNUNCIATOR (INSEP ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021272-021	1021255-021
1021272-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — DECIMALS ±.005 ±.02 ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN DATE 9 DEC 65
CHECKED 15 JAN 66
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

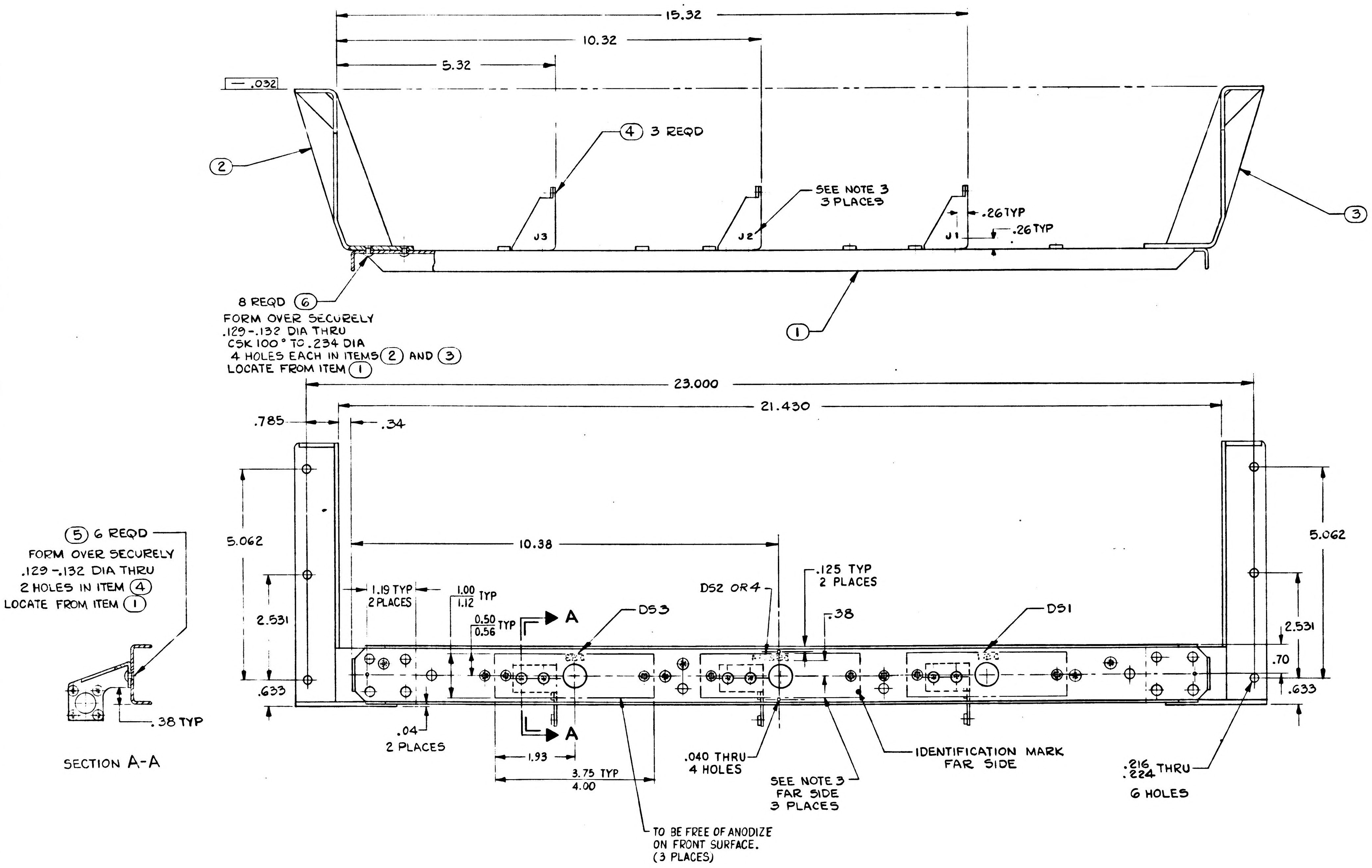
SUPPORT, ANNUNCIATOR PANEL
AND EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

CODE IDENT NO 80230 SIZE E 1021269
SCALE FULL SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND1002019.
3. MARK CHARACTERS .12 HIGH, COLOR BLACK PER ND1002019, LOCATE AS SHOWN.
4. RIVET HOLES AND C'SINKS TO BE FREE OF ANODIZE TO PROVIDE ELECTRICAL GROUND PATH.
5. CHEMICAL FILM FINISH PER MIL-C-5541 SHALL BE APPLIED TO ALL RIVETS AND EXPOSED ALUMINUM SURFACES.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR [illegible]			
	B	REVISED PER TDRR 26897		16 MAR 66	
	C	REVISED PER TDRR 28426		[illegible] 66	
	D	REVISED PER TDRR 29365		[illegible] 66	



15.32
10.32
5.32
— .032
④ 3 REQD
②
③
SEE NOTE 3
3 PLACES
J3
J2
J1
.26 TYP
.26 TYP
8 REQD ⑥
FORM OVER SECURELY
.129-.132 DIA THRU
CSK 100° TO .234 DIA
4 HOLES EACH IN ITEMS ② AND ③
LOCATE FROM ITEM ①
①
23.000
21.430
.785
.34
5.062
10.38
2.531
.633
1.19 TYP
2 PLACES
1.00
1.12 TYP
0.50
0.56 TYP
A
DS3
DS2 OR 4
.125 TYP
2 PLACES
.38
DS1
5.062
2.531
.70
.633
.04
2 PLACES
1.93
3.75 TYP
4.00
.040 THRU
4 HOLES
SEE NOTE 3
FAR SIDE
3 PLACES
IDENTIFICATION MARK
FAR SIDE
.216
.224 THRU
6 HOLES
TO BE FREE OF ANODIZE
ON FRONT SURFACE.
(3 PLACES)
⑤ 6 REQD
FORM OVER SECURELY
.129-.132 DIA THRU
2 HOLES IN ITEM ④
LOCATE FROM ITEM ①
.38 TYP
SECTION A-A

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
6	8	MS20426AD4-6	RIVET, 100° CSK (1897065-206)
5	6	MS20426AD4-5	RIVET, 100° CSK (1897065-205
4	3	1021267	BRACKET, ELEC CONN. (INSEP. ASSY)
3	1	1021274	BRACKET, RH SUPPORT (INSEP ASSY
2	1	1021268	BRACKET, LH SUPPORT (INSEP ASSY
1	1	1021266	PANEL, ANNUNCIATOR (INSEP ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021272-021	1021255-021
1021272-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS: + — −
DECIMALS: ±.005 ±.02
ANGLES: ± 2° −
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Engel DATE 9 DEC 65
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

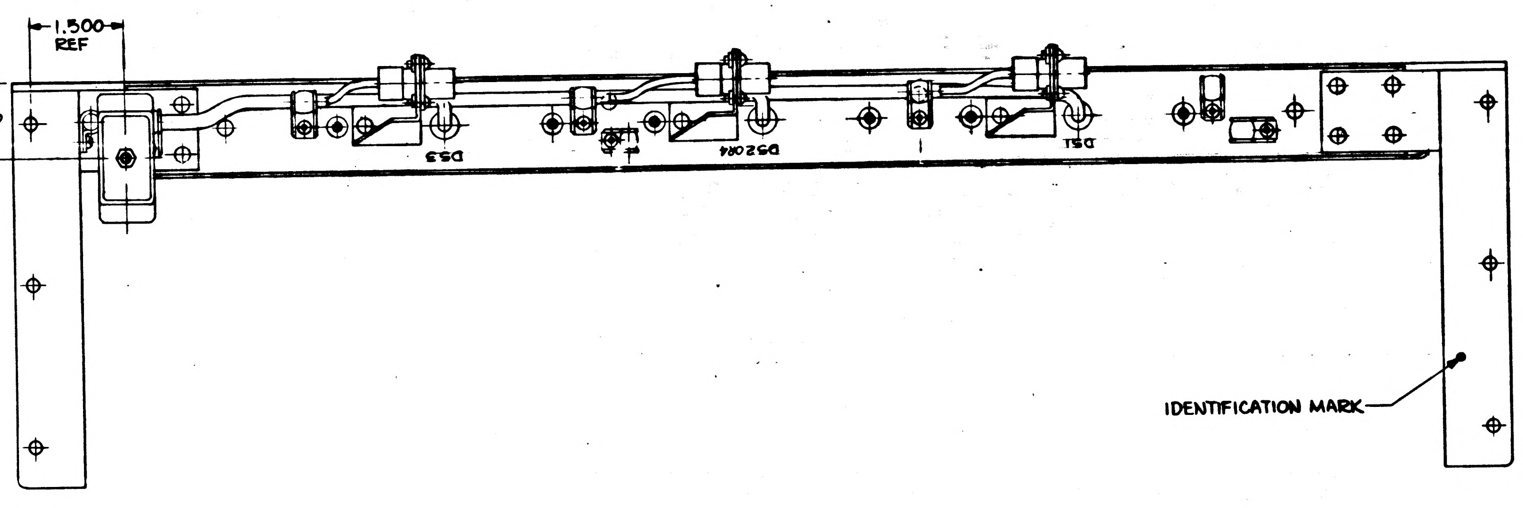
SUPPORT, ANNUNCIATOR PANEL
AND EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

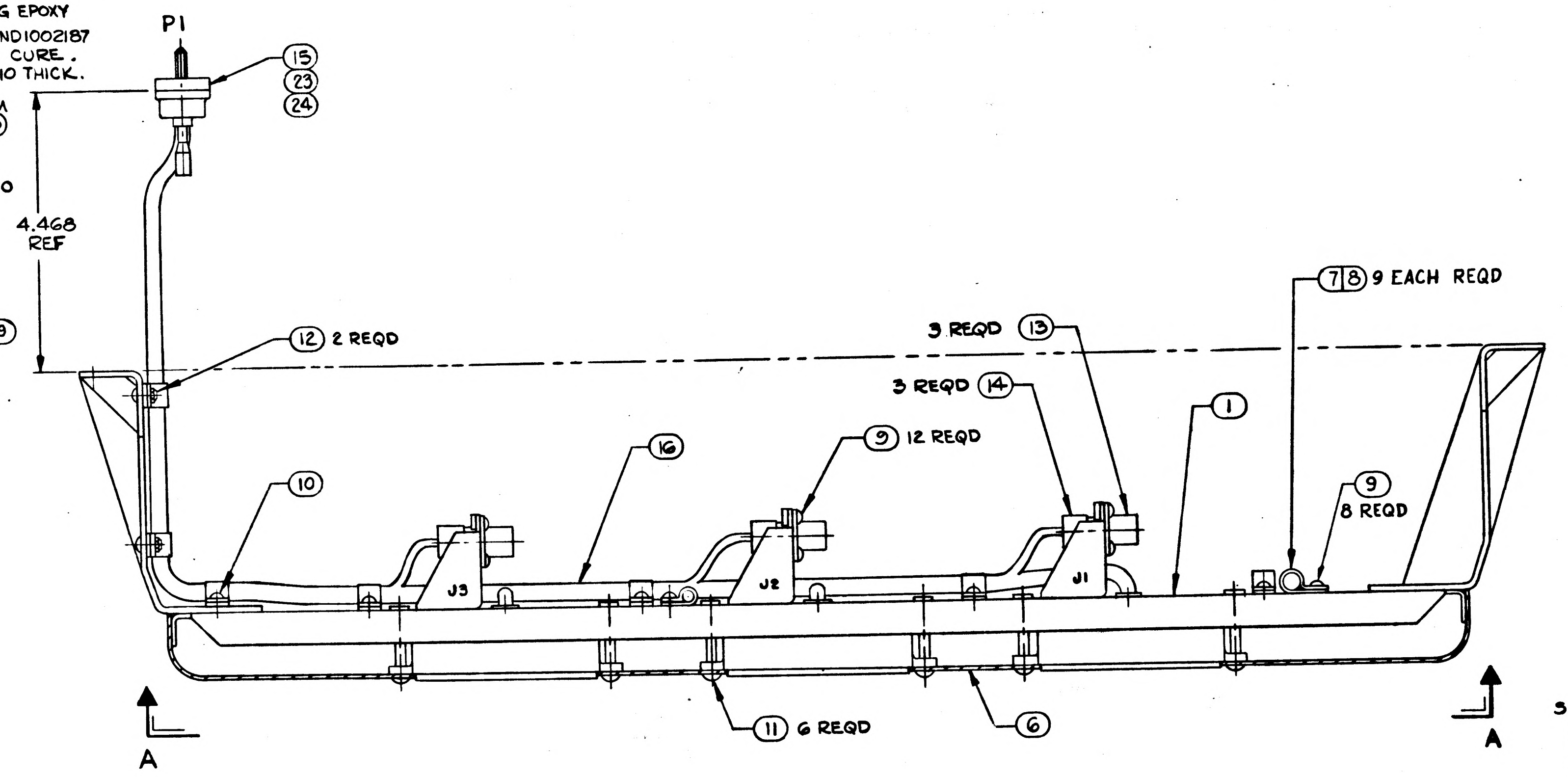
CODE IDENT NO 80230
SIZE E
1021269
SCALE FULL
SHEET 1 OF 1

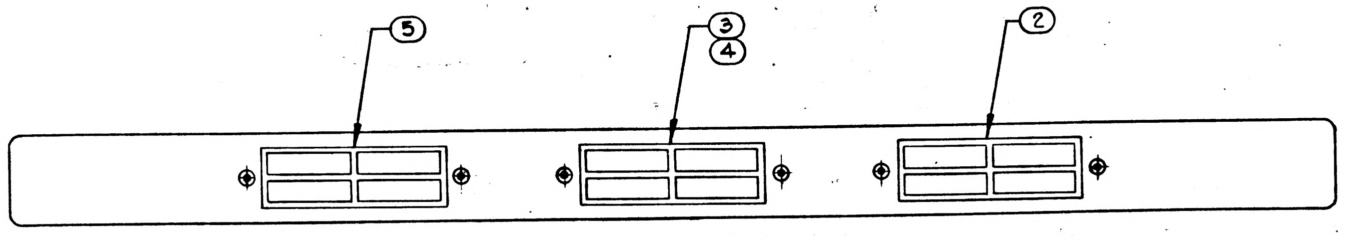
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
		INITIAL RELEASE CLASS A PER TDRR 2532.			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
3. ENCAPSULATE WIRED SIDE OF J1, J2, J3 & P. WITH LEAD INSULATION EXTENDING INTO THE ENCAPSULATION .12 MIN. AND ENCAPSULATE ALL CONNECTIONS TO .06 MIN DEPTH USING ITEMS (17 18 19 20) PER ND1002236 EXCEPT THE OVEN TEMPERATURE SHALL BE 30° F. MAX.
4. INSTALL ITEM (21) IN ACCORDANCE WITH ND1002206.
5. LACE CONDUCTORS PER ND1002032.
6. ASSEMBLE ITEM (22) IN ALL UNUSED CONTACT HOLES OF J1, J2 & J3 ITEM (13).
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING
8. STRIP INSULATION . AFTER CUTTING LEADS TO PROPER LENGTH.
9. BOND ITEM (6) TO ITEM (1) USING EPOXY CEMENT ITEMS (26) AND (27) PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
10. ANNUNCIATOR PANEL TO BE FOAM FILLED USING ITEMS (24) AND (25) PER ND1002002 TYPE C SUCH THAT THE AVERAGE CURED DENSITY SHALL BE 3.5 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 150°F FOR FOUR HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60°F PER HOUR.
11. FOAM FILL HOLES SHALL BE SEALED USING ITEM (28) AND (29) PER ND1002004 TYPE II WITH .062 MIN THICKNESS FLUSH WITH SURFACE.







PARTIAL VIEW A-A

WIRING TABLE	
FROM C.R. PT.	TO C.R. PT.
XDS - WHT	P1 - 41
- WHT	- 30
- YEL	- 31
- YEL	- 42
- RED	- 53
- RED	- 54
- BLK	- 17
XDS1 - BLK	- 15
XDS2 - RED	- 18
- RED	- 19
- BLK	- 62
- BLK	- 63
- WHT	- 73
XDS2 - WHT	P1 - 84

FROM CIR PT	TO CIR. PT.
XDS2 - YEL	P1 - 72
XDS2 - YEL	- 83
XDS3 - RED	- 60
- RED	- 61
- BLK	- 71
- BLK	- 82
- WHT	- 51
- WHT	- 52
- YEL	- 50
XDS3 - YEL	- 70
XDS4 - GRN	- 18
- GRN	- 19
- BLK	- 62
- BLK	- 63
XDS4 - WHT	P1 - 73

FROM CIR PT	TO CIR PT
XDS4 - WHT	P1 - 74
XDS4 - YEL	P1 - 72
XDS4 - YEL	P1 - 83

	QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			021	011				
			1	1		30	1021315	WIRE HARNESS
			AR	AR		29	1010686	CATALYST
			AR	AR		28	1010657	EPOXY RESIN
SEE NOTE 7			AR	AR		27	1010661	EPOXY RESIN
			AR	AR		26	1010679	ADHESIVE ACTIVATOR
			AR	AR		25	1010864	POLYURETHENE PREPOLYMER
			AR	AR		24	1010863	POLYURETHENE RESIN
			108	108		23	1010738-	PIN CONTACTS
			15	15		22	1010958-001	PLUG, SEALING
			6	6		21	1010770-2	CONTACT, ELECTRICAL
			AR	AR		20	1012504-2	PRIMER, METAL
			AR	AR		19	1012504-1	PRIMER, METAL
			AR	AR		18	1012503-2	COMPOUND, POLYURETHANE
			AR	AR		17	1012503-1	COMPOUND, POLYURETHANE
			1	1		16	1010812-3	SEAL, RUBBER
SEE NOTE 7			1	1		15	1010825-5	CONNECTOR, PLUG
			3	3		14	2014670-10	ADAPTER CONNECTOR
SEE NOTE 7			3	3		13	1010930-017	CONNECTOR, RECEPTACLE
			2	2		12	1010617-4	NUT-HEXAGON, SELF-LOCKING
			6	6		11	1010618-29	SCREW - BUTTON HEAD
			1	1		10	1010618-15	SCREW - BUTTON HEAD
			20	20		9	1010618-14	SCREW - BUTTON HEAD
			9	9		8	1011918-3	WASHER, CABLE CLAMP
SEE NOTE 7			9	9		7	1000220-1 THRU 1000220-12	CLAMP, CABLE
			1	1		6	1021271	COVER, ANNUNCIATOR PANEL
SEE NOTE 7			1	1		5	1008838-3	ANNUNCIATOR
			1	-		4	-2	
			-	1		3	-4	
SEE NOTE 7			1	1		2	1008838-1	ANNUNCIATOR
			1	1		1	1021269	SPT, ANN PNL & EYEPIECE STOW [illegible] ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021255-021	1021255-021	-021
1021255-011	1021255-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Engel DATE 20 DEC 65
CHECKED
APPROVAL 5 JAN 66
CONTRACT NAS 9-497
A. C. METZGER
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

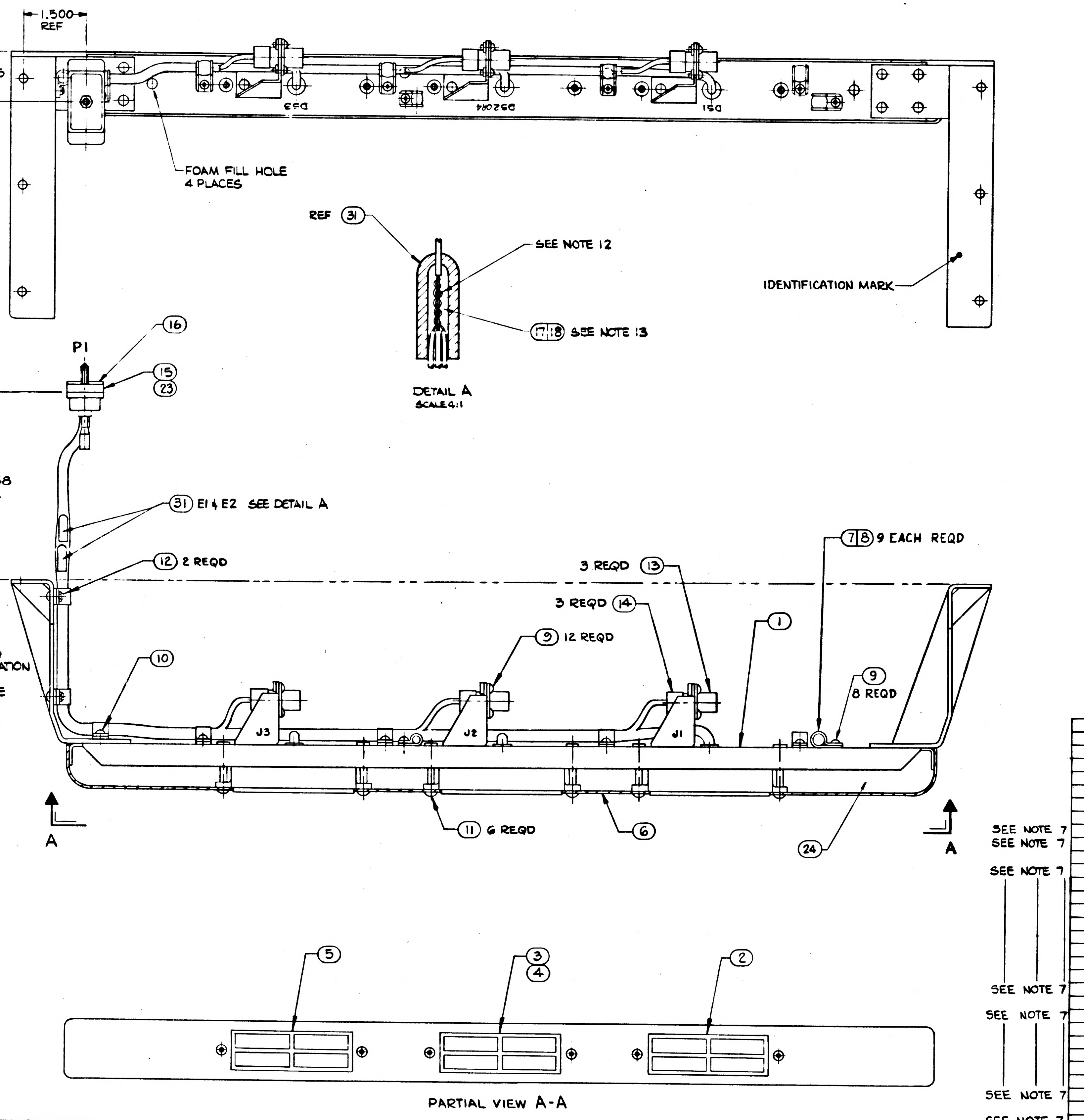
ANNUNCIATOR PANEL
AND SUPPORT ASSEMBLY

SIZE E
CODE IDENT NO. 80230
1021272
SCALE FULL
SHEET 1 OF 1

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			
	3	Revised Per TDRR 27927		19 APR	RJJ

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
3. ENCAPSULATE WIRED SIDE OF J1, J2, J3 & P1 WITH LEAD INSULATION EXTENDING INTO THE ENCAPSULATION .12 MIN. AND ENCAPSULATE ALL CONNECTIONS TO .06 MIN DEPTH USING ITEMS (17|18|19|20) PER ND1002236 EXCEPT THE OVEN TEMPERATURE SHALL BE 150° F. MAX.
4. INSTALL ITEM (2) INTO ITEM (13) IN ACCORDANCE WITH ND1002206 PER THE REQUIREMENTS OF ITEM (30).
5. LACE CONDUCTORS PER ND1002032.
6. ASSEMBLE ITEM (22) IN ALL UNUSED CONTACT HOLES OF J1, J2 & J3 ITEM (13)
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING
8. STRIP INSULATION .10 AFTER CUTTING LEADS TO PROPER LENGTH.
9. BOND ITEM (6) TO ITEMS (1|2|5) AND (3) OR (4) USING EPOXY CEMENT ITEMS (26) AND (27) PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. A SEAL IS TO BE OBTAINED BETWEEN COVER AND MATING PARTS.
10. ANNUNCIATOR PANEL TO BE FOAM FILLED USING ITEM (24) PER ND1002002 TYPE B. CURE SHALL BE 140°F FOR 4.0 HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60°F PER HOUR.
11. FOAM FILL HOLES SHALL BE SEALED USING ITEM (28) AND (29) PER ND1002004 TYPE II WITH .062 MIN THICKNESS FLUSH WITH SURFACE.
12. SOLDER PER MIL-S-6872 (ES2505-) USING ITEM (35) OR ITEMS (33) AND (34).
13. MOISTURE PROOF SOLDER JOINT USING ITEM (31) AND ENCAPSULATE JOINT WITH LEADS EXTENDING INTO THE ENCAPSULATION .12 MIN USING ITEMS (17) AND (18) PER ND1002236 EXCEPT CURE TEMPERATURE TO BE 150°F MAX.
14. ASSEMBLE ITEM (23) INTO ITEM (15) IN ACCORDANCE WITH ND1002206.



DETAIL A
SCALE 4:1

PARTIAL VIEW A-A

WIRING TABLE	
FROM CIR. PT.	TO CIR. PT.
XDS1 - WHT	P1 - 41
- WHT	- 30
- YEL	- 31
- YEL	- 42
- RED	- 53
- RED	- 54
- BLK	- 17
XDS1 - BLK	- 15
XDS2 - RED	- 18
- RED	- 19
- BLK	- 62
- BLK	- 63
- WHT	- 73
XDS2 - WHT	P1 - 84

FROM CIR PT	TO CIR. PT.
XDS2 - YEL	P1 - 72
XDS2 - YEL	- 83
XDS3 - RED	- 60
- RED	- 61
- BLK	- 71
- BLK	- 82
- WHT	- 51
- WHT	- 52
- YEL	- 50
XDS3 - YEL	- 70
XDS4 - GRN	- 18
- GRN	- 19
- BLK	- 62
- BLK	- 63
XDS4 - WHT	P1 - 73

FROM CIR PT	TO CIR PT
XDS4 - WHT	P1 - 84
XDS4 - YEL	P1 - 72
XDS4 - YEL	P1 - 83

						ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			AR	AR		35	SN60 WRAP	SOLDER QQ-S-571
			AR	AR		34	MIL-F-14256 TYP A OR W	FLUX
			AR	AR		33	SN60 WS	SOLDER QQ-S-571
			AR	AR		32	MIL-T-713	LACING TAPE
			2	2		31	1021316-002	BOOT, MOISTURE PROOFING
			1	1		30	1021315	WIRE HARNESS
			AR	AR		29	1010686	CATALYST
			AR	AR		28	1010657	EPOXY RESIN
SEE NOTE 7			AR	AR		27	1010661	EPOXY RESIN
SEE NOTE 7			AR	AR		26	1010679	ADHESIVE ACTIVATOR
			~~AR~~	~~AR~~		25	~~1010364~~	~~POLYURETHENE PREPOLYMER~~
SEE NOTE 7			AR	AR		24	1010798	POLYURETHENE FOAM
			108	108		23	1010738-5	PIN CONTACTS
			15	15		22	1010958-001	PLUG, SEALING
			6	6		21	1010770-2	CONTACT, ELECTRICAL
			AR	AR		20	1012504-2	PRIMER, METAL
			AR	AR		19	1012504-1	PRIMER, METAL
			AR	AR		18	1012503-2	COMPOUND, POLYURETHANE
			AR	AR		17	1012503-1	COMPOUND, POLYURETHANE
			1	1		16	1010812-3	SEAL, RUBBER
SEE NOTE 7			1	1		15	1010825-5	CONNECTOR, PLUG
			3	3		14	2014670-10	ADAPTER CONNECTOR
SEE NOTE 7			3	3		13	1010930-017	CONNECTOR, RECEPTACLE
			2	2		12	MS35649-44	NUT-PLAIN HEXAGON
			6	6		11	1010618-29	SCREW - BUTTON HEAD
			1	1		10	1010618-15	SCREW - BUTTON HEAD
			20	20		9	1010618-14	SCREW - BUTTON HEAD
			9	9		8	1011918-3	WASHER, CABLE CLAMP
SEE NOTE 7			9	9		7	1000220-1 THRU 1000220-12	CLAMP, CABLE
			1	1		6	1021271	COVER, ANNUNCIATOR PANEL
SEE NOTE 7			1	1		5	1008838-3	ANNUNCIATOR
			1	-		4	-2	
			-	1		3	-4	
SEE NOTE 7			1	1		2	1008838-1	ANNUNCIATOR
			1	1		1	1021269	SPT, ANN PNL & EYEPIECE STOW (INSEP ASSY)
			021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021255-021	1021255-02	-021
1021255-011	1021255-011	-011
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — − —
3 PLACE DECIMALS + — − —
ANGLES + — − —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Gagel DATE 20 DEC 65
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ANNUNCIATOR PANEL AND SUPPORT ASSEMBLY

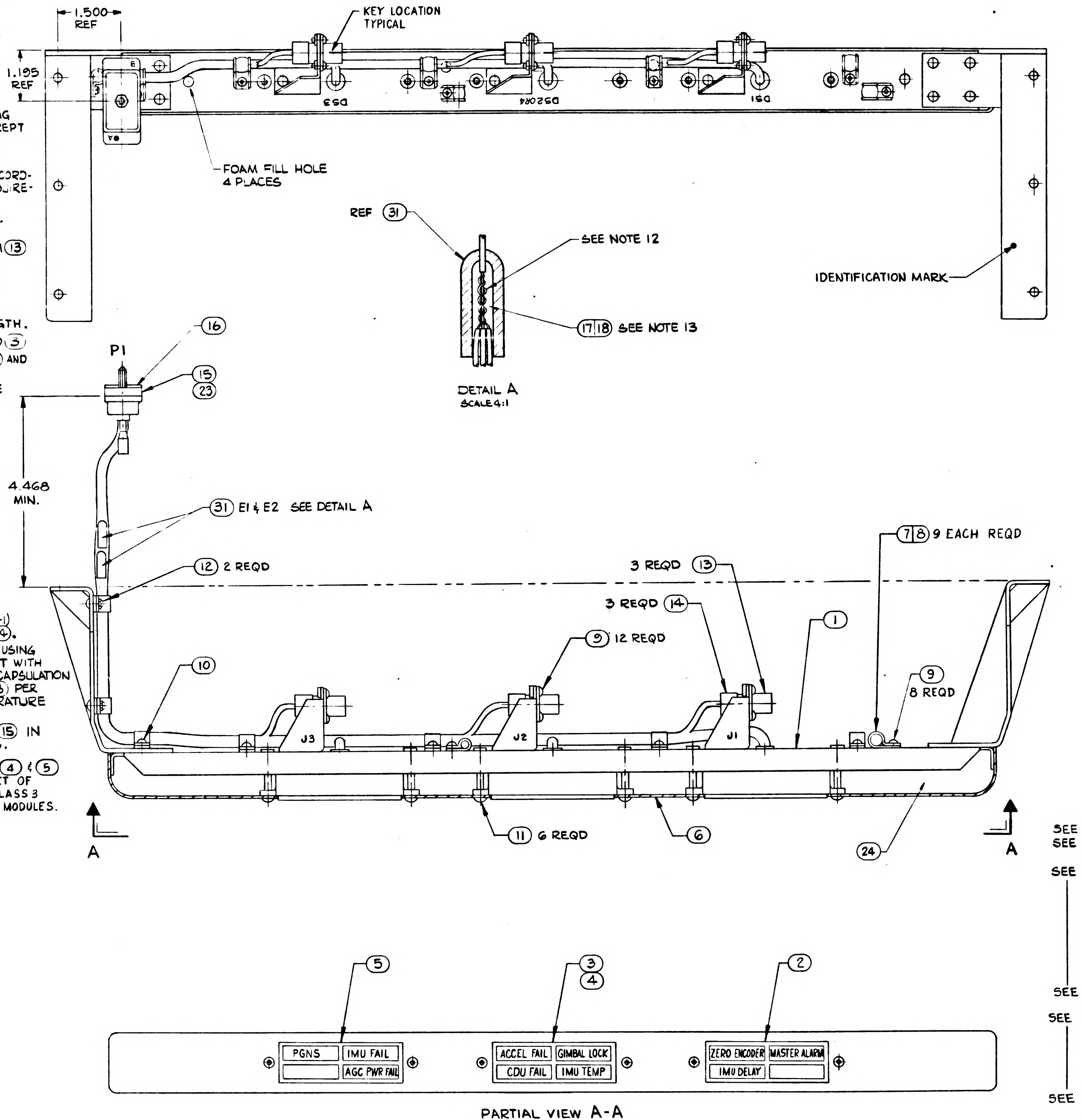
SIZE E
CODE IDENT NO. 80230
1021272
SCALE FULL
SHEET 1 OF 1

1021272

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	REVISIONS				
	A	INITIAL RELEASE CLASS A PER TDRR 25321			
	B	REVISED PER TDRR 27927		9 APR 66	RJJ P7
	C	REVISED PER TDRR 28378		9 MAY 66	JK 66

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
3. ENCAPSULATE WIRED SIDE OF J1, J2, J3 & P1 WITH LEAD INSULATION EXTENDING INTO THE ENCAPSULATION .12 MIN. AND ENCAPSULATE ALL CONNECTIONS TO .06 MIN DEPTH USING ITEMS (17 18 19 20) PER ND1002236 EXCEPT THE OVEN TEMPERATURE SHALL BE 150° F. MAX.
4. INSTALL ITEM (21) INTO ITEM (13) IN ACCORDANCE WITH ND1002206 PER THE REQUIREMENTS OF ITEM (30).
5. LACE CONDUCTORS PER ND1002032.
6. ASSEMBLE ITEM (22) IN ALL UNUSED CONTACT HOLES OF J1, J2 & J3 ITEM (13)
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING
8. STRIP INSULATION .10 AFTER CUTTING LEADS TO PROPER LENGTH.
9. BOND ITEM (6) TO ITEMS (1 2 5) AND (3) OR (4) USING EPOXY CEMENT ITEMS (26) AND (27) PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. A SEAL IS TO BE OBTAINED BETWEEN COVER AND MATING PARTS.
10. ANNUNCIATOR PANEL TO BE FOAM FILLED USING ITEM (24) PER ND1002002 TYPE B. CURE SHALL BE 140°F FOR 4.0 HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60°F PER HOUR.
11. FOAM FILL HOLES SHALL BE SEALED USING ADHESIVE PER MMM-A-132 TYPE I CLASS 3 (EPON 934) WITH .062 MIN THICKNESS FLUSH WITH SURFACE.
12. SOLDER PER MIL-S-6872 (ES2505-1) USING ITEM (35) OR ITEMS (33) AND (34).
13. MOISTURE PROOF SOLDER JOINT USING ITEM (31) AND ENCAPSULATE JOINT WITH LEADS EXTENDING INTO THE ENCAPSULATION .12 MIN USING ITEMS (17) AND (18) PER ND1002236 EXCEPT CURE TEMPERATURE TO BE 150°F MAX.
14. ASSEMBLE ITEM (23) INTO ITEM (15) IN ACCORDANCE WITH ND1002206.
15. ANNUNCIATOR LIGHTS ITEMS (2), (3), (4) & (5) TO BE SECURED IN PLACE WITH FILLET OF ADHESIVE PER MMM-A-132 TYPE I, CLASS 3 (EPON 934) AROUND ENDS OF LIGHT MODULES.



PARTIAL VIEW A-A

WIRING TABLE	
FROM C.R. PT.	TO C.R. PT.
XDS1 - WHT	P1 - 41
- WHT	- 30
- YEL	- 31
- YEL	- 42
- RED	- 53
- RED	- 54
- BLK	- 17
XDS1 - BLK	- 3
XDS2 - RED	- 18
- RED	- 19
- BLK	- 62
- BLK	- 63
- WHT	- 73
XDS2 - WHT	P1 - 84

FROM CIR PT	TO CIR. PT
XDS2 - YEL	P1 - 72
XDS2 - YEL	- 83
XDS3 - RED	- 60
- RED	- 61
- BLK	- 71
- BLK	- 82
- WHT	- 51
- WHT	- 52
- YEL	- 50
XDS3 - YEL	- 70
XDS4 - GRN	- 18
- GRN	- 19
- BLK	- 62
- BLK	- 63
XDS4 - WHT	P1 - 73

FROM CIR PT	TO CIR PT
XDS4 - WHT	P1 - 84
XDS4 - YEL	P1 - 72
XDS4 - YEL	P1 - 83

			QUANTITY REQUIRED 021	QUANTITY REQUIRED 011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			AR	AR		35	SN60 WRAP	SOLDER QQ-S-571
			AR	AR		34	MIL-F-14256 TYP A OR W	FLUX
			AR	AR		33	SN60 WS	SOLDER QQ-S-571
			AR	AR		32	1012507-002	LACING TAPE
			2	2		31	1021316-002	BOOT, MOISTURE PROOFING
			1	1		30	1021315	WIRE HARNESS
			~~AR~~	~~AR~~		29	~~1010686~~	~~CATALYST~~
			~~AR~~	~~AR~~		28	~~1010657~~	~~EPOXY RESIN~~
SEE NOTE 7			AR	AR		27	1010661	EPOXY RESIN
SEE NOTE 7			AR	AR		26	1010679	ADHESIVE ACTIVATOR
			~~AR~~	~~AR~~		25	~~1010364~~	~~POLYURETHENE PREPOLYMER~~
SEE NOTE 7			AR	AR		24	1010798	POLYURETHENE FOAM
			108	108		23	1010738-5	PIN CONTACTS
			15	15		22	1010958-001	PLUG, SEALING
			6	6		21	1010770-2	CONTACT, ELECTRICAL
			AR	AR		20	1012504-2	PRIMER, METAL
			AR	AR		19	1012504-1	PRIMER, METAL
			AR	AR		18	1012503-2	COMPOUND, POLYURETHANE
			AR	AR		17	1012503-1	COMPOUND, POLYURETHANE
			1	1		16	1010812-3	SEAL, RUBBER
SEE NOTE 7			1	1		15	1010825-5	CONNECTOR, PLUG
			3	3		14	2014670-10	ADAPTER CONNECTOR
SEE NOTE 7			3	3		13	1010930-017	CONNECTOR, RECEPTACLE
			2	2		12	MS35649-44	NUT-PLAIN HEXAGON
			6	6		11	1010618-29	SCREW-BUTTON HEAD
			1	1		10	1010618-15	SCREW-BUTTON HEAD
			20	20		9	1010618-14	SCREW-BUTTON HEAD
			9	9		8	1011918-3	WASHER, CABLE CLAMP
SEE NOTE 7			9	9		7	1000220-1 THRU 1000220-12	CLAMP, CABLE
			1	1		6	1021271	COVER, ANNUNCIATOR PANEL
SEE NOTE 7			1	1		5	1008838-3	ANNUNCIATOR
			1	-		4	-2	
			-	1		3	-4	
SEE NOTE 7			1	1		2	1008838-1	ANNUNCIATOR
			1	1		1	1021269	SPT, ANN PNL & EYEPIECE STOW. (SEE P ASSY)

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021255-021	1021255-021	-021
1021255-011	1021255-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — −
3 PLACE DECIMALS + — −
ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN DATE 20 DEC 65
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ANNUNCIATOR PANEL
AND SUPPORT ASSEMBLY

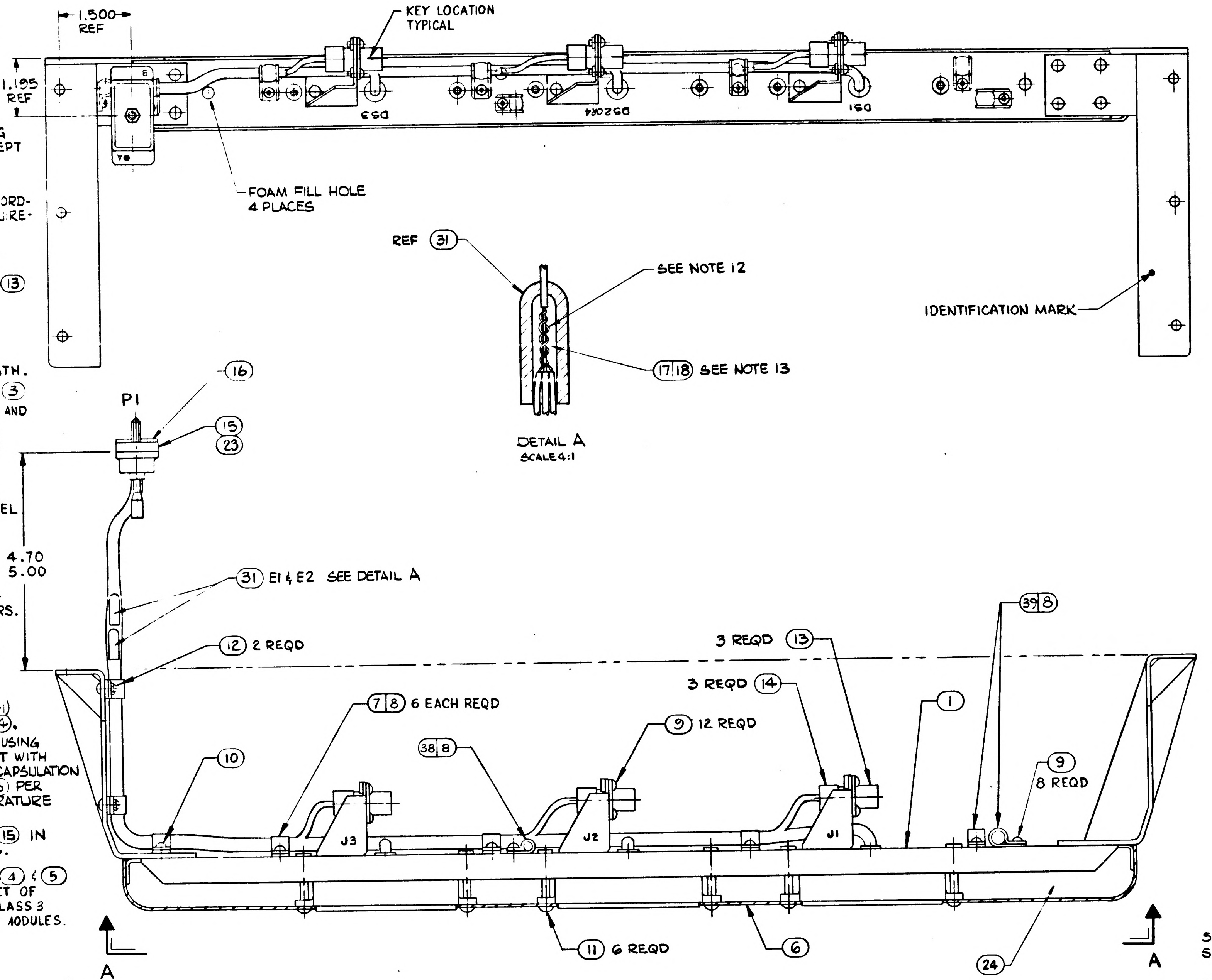
SIZE E
CODE IDENT NO. 80230
1021272
SCALE FULL
SHEET 1 OF 1

MIL-10822 D

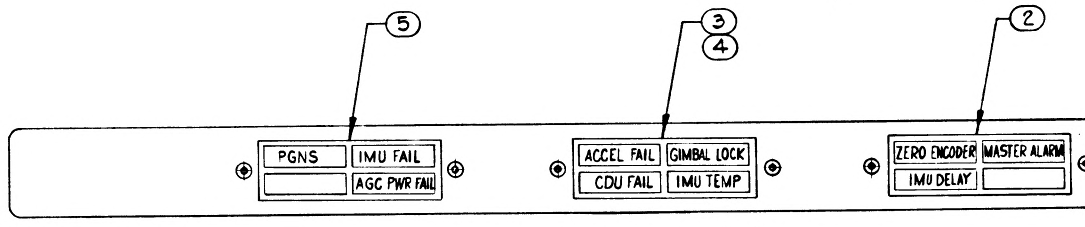
REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			
	B	REVISED PER TDRR 27927		19 APR 66	RJJ PJ
	C	REVISED PER TDRR 28378		9 MAY 66	JK AL
	D	REVISED PER TDRR 29170		3 MAY 66	JHP

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
3. ENCAPSULATE WIRED SIDE OF J1, J2, J3 & P1 WITH LEAD INSULATION EXTENDING INTO THE ENCAPSULATION .12 MIN. AND ENCAPSULATE ALL CONNECTIONS TO .06 MIN DEPTH USING ITEMS (17)(18)(19)(20) PER ND1002236 EXCEPT THE OVEN TEMPERATURE SHALL BE 150° F. MAX.
4. INSTALL ITEM (21) INTO ITEM (13) IN ACCORDANCE WITH ND1002206 PER THE REQUIREMENTS OF ITEM (30).
5. LACE CONDUCTORS PER ND 1002032.
6. ASSEMBLE ITEM (22) IN ALL UNUSED CONTACT HOLES OF J1, J2 & J3 ITEM (13)
7. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING
8. STRIP INSULATION .10 AFTER CUTTING LEADS TO PROPER LENGTH.
9. BOND ITEM (6) TO ITEMS (1)(2)(5) AND (3) OR (4) USING EPOXY CEMENT ITEMS (26) AND (27) PER ND 1002187 TYPE II WITH ROOM TEMPERATURE CURE. A SEAL IS TO BE OBTAINED BETWEEN COVER AND MATING PARTS.
10. ANNUNCIATOR PANEL TO BE POTTED USING ITEMS (36) AND (37). PANEL SHALL BE FILLED WITH ITEM (37) AND THEN POTTED WITH ITEM (36) PER ND 1002009 METHOD J LESS THE COLORANT AND AND FILLER, USING CARE TO OBTAIN COMPLETE FILL. CURE AT 140°F FOR 8 HOURS.
11. POTTING HOLES SHALL BE SEALED USING ADHESIVE PER MMM-A-132 TYPE I CLASS 3 (EPON934) WITH .062 MIN THICKNESS FLUSH WITH SURFACE.
12. SOLDER PER MIL-S-6872 (ES2505-1) USING ITEM (35) OR ITEMS (33) AND (34).
13. MOISTURE PROOF SOLDER JOINT USING ITEM (31) AND ENCAPSULATE JOINT WITH LEADS EXTENDING INTO THE ENCAPSULATION .12 MIN USING ITEMS (17) AND (18) PER ND 1002236 EXCEPT CURE TEMPERATURE TO BE 150°F MAX.
14. ASSEMBLE ITEM (23) INTO ITEM (15) IN ACCORDANCE WITH ND1002206.
15. ANNUNCIATOR LIGHTS ITEMS (2), (3), (4) & (5) TO BE SECURED IN PLACE WITH FILLET OF ADHESIVE PER MMM-A-132 TYPE I, CLASS 3 (EPON 934) AROUND ENDS OF LIGHT MODULES.



DETAIL A
SCALE 4:1



PARTIAL VIEW A-A

					ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			2	2	39	1000220-5	CLAMP CABLE
			1	1	38	1000220-4	CLAMP CABLE
			AR	AR	37	1008901	FILLER, EPOXY MICROSPHERES
			AR	AR	36	1008821	POLYURETHANE STAKING COMPOUND
			AR	AR	35	SN60 WRAP	SOLDER QQ-S-571
			AR	AR	34	MIL-F-14256 TYP A OR W	FLUX
			AR	AR	33	SN60 WS	SOLDER QQ-S-571
			AR	AR	32	1012507-002	LACING TAPE
			2	2	31	1021316-002	BOOT, MOISTURE PROOFING
			1	1	30	1021315	WIRE HARNESS
			~~AR~~	~~AR~~	29	~~1010686~~	~~CATALYST~~
			~~AR~~	~~AR~~	28	~~1010657~~	~~EPOXY RESIN~~
SEE NOTE 7			AR	AR	27	1010661	EPOXY RESIN
SEE NOTE 7			AR	AR	26	1010679	ADHESIVE ACTIVATOR
			~~AR~~	~~AR~~	25	~~1010364~~	~~POLYURETHENE PREPOLYMER~~
SEE NOTE 7			~~AR~~	~~AR~~	24	~~1010798~~	~~POLYURETHENE FOAM~~
			108	108	23	1010738-5	PIN CONTACTS
			15	15	22	1010958-001	PLUG, SEALING
			6	6	21	1010770-2	CONTACT, ELECTRICAL
			AR	AR	20	1012504-2	PRIMER, METAL
			AR	AR	19	1012504-1	PRIMER, METAL
			AR	AR	18	1012503-2	COMPOUND, POLYURETHANE
			AR	AR	17	1012503-1	COMPOUND, POLYURETHANE
			1	1	16	1010812-3	SEAL, RUBBER
SEE NOTE 7			1	1	15	1010825-5	CONNECTOR, PLUG
			3	3	14	2014670-10	ADAPTER CONNECTOR
SEE NOTE 7			3	3	13	1010930-017	CONNECTOR, RECEPTACLE
			2	2	12	MS35649-44	NUT-PLAIN HEXAGON
			6	6	11	1010618-29	SCREW-BUTTON HEAD
			1	1	10	1010618-15	SCREW-BUTTON HEAD
			20	20	9	1010618-14	SCREW-BUTTON HEAD
			9	9	8	1011918-3	WASHER, CABLE CLAMP
SEE NOTE 7			6	6	7	1000220-1 THRU 1000220-12	CLAMP, CABLE
			1	1	6	1021271	COVER, ANNUNCIATOR PANEL
SEE NOTE 7			1	1	5	1008838-3	ANNUNCIATOR
			1	-	4	-2	
			-	1	3	-4	
SEE NOTE 7			1	1	2	1008838-1	ANNUNCIATOR
			1	1	1	1021269	SPT, ANN PNL & EYEPIECE STOW. [illegible] ASSY
			021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER

QUANTITY REQUIRED — LIST OF PARTS AND MATERIALS

WIRING TABLE	
FROM CIR. PT.	TO CIR. PT.
XDS1 - WHT	P1 - 41
- WHT	- 30
- YEL	- 31
- YEL	- 42
- RED	- 53
- RED	- 54
- BLK	- 17
XDS1 - BLK	- 5
XDS2 - RED	- 18
- RED	- 19
- BLK	- 62
- BLK	- 63
- WHT	- 73
XDS2 - WHT	P1 - 84

FROM CIR PT	TO CIR. PT
XDS2 - YEL	P1 - 72
XDS2 - YEL	- 83
XDS3 - RED	- 60
- RED	- 61
- BLK	- 71
- BLK	- 82
- WHT	- 51
- WHT	- 52
- YEL	- 50
XDS3 - YEL	- 70
XDS4 - GRN	- 18
- GRN	- 19
- BLK	- 62
- BLK	- 63
XDS4 - WHT	P1 - 73

FROM CIR PT	TO CIR PT
XDS4 - WHT	P1 - 84
XDS4 - YEL	P1 - 72
XDS4 - YEL	P1 - 83

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021255-021	1021255-021	-021
1021255-011	1021255-011	-011

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Engle DATE 20 DEC 65
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ANNUNCIATOR PANEL
AND SUPPORT ASSEMBLY

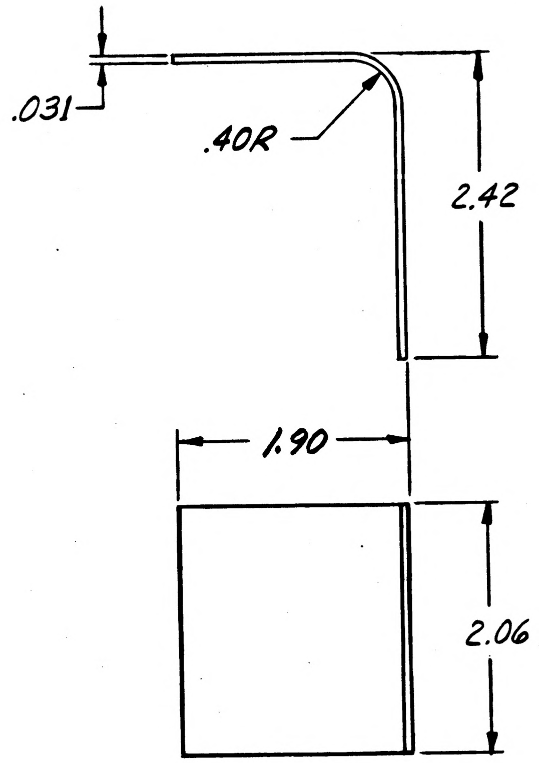
SIZE E
CODE IDENT NO. 80230
1021272
SCALE FULL
SHEET 1 OF 1

MIL-10932 D

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (AL ALY 6061).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GREY
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.



NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-011
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN Kosmatka DATE 14 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkul 15 JAN 66
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, ANGLE-
UPPER

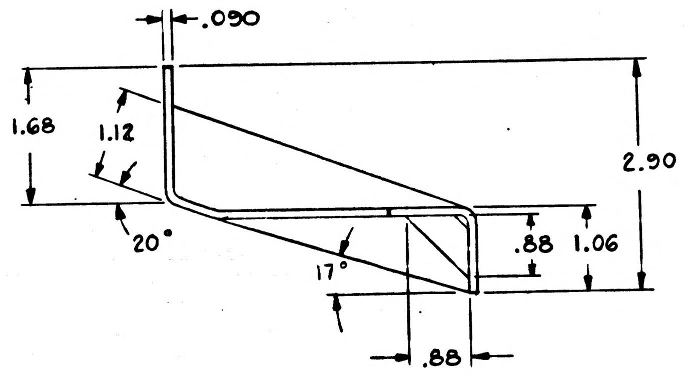
SIZE C
CODE IDENT NO. 80230
1021273
SCALE FULL
SHEET 1 OF 1

MIL-1052D D

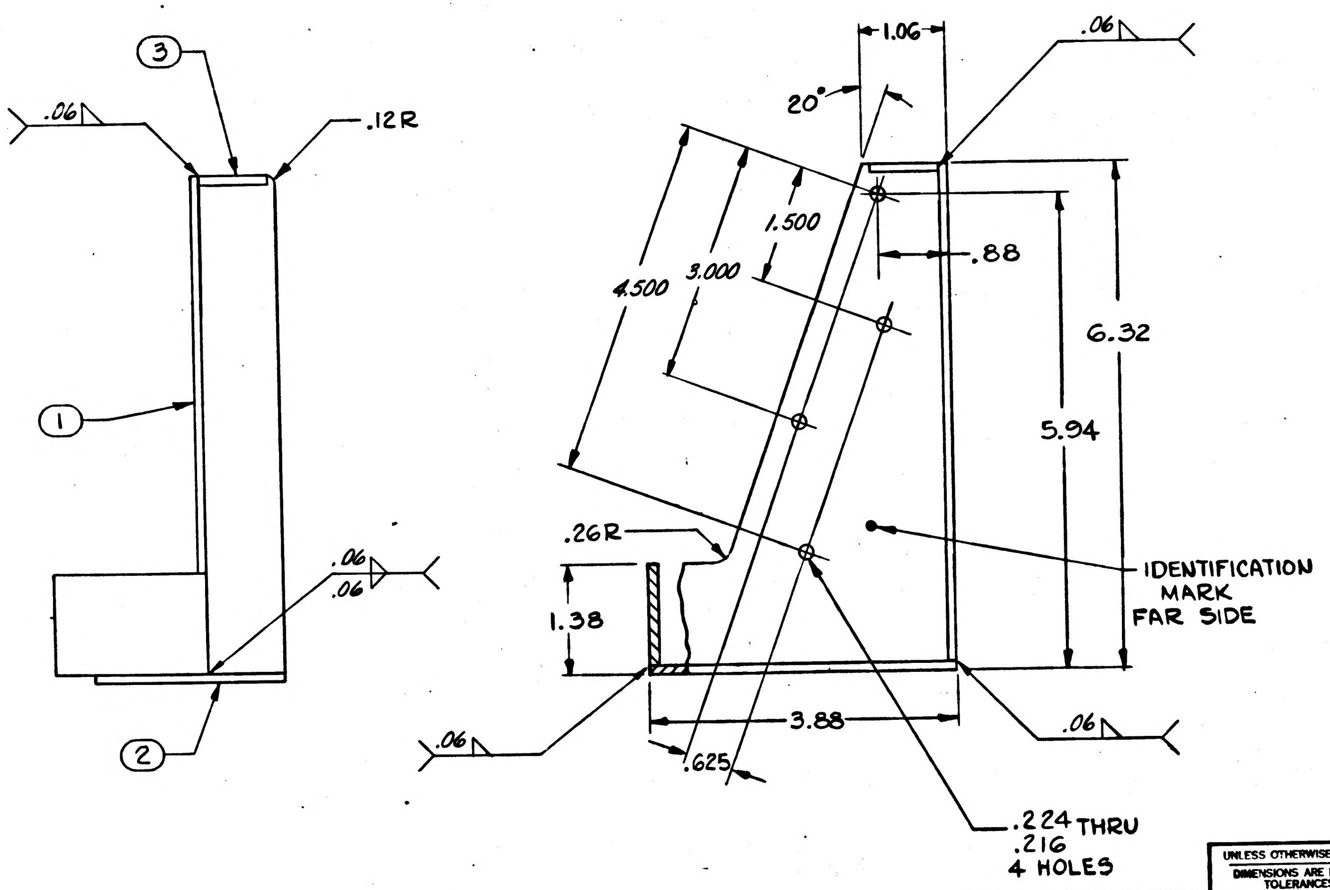
REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. WELD PER MIL-W-8604.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
6. ALL BEND RADII TO BE .12R.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.



.090
1.68
1.12
20°
17°
2.90
.88
1.06
.88



3
.06
.12R
1
.06
.06
2
1.06
.06
20°
4.500
3.000
1.500
.88
6.32
5.94
.26R
1.38
IDENTIFICATION MARK FAR SIDE
.06
3.88
.06
.625
.224 THRU
.216
4 HOLES

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3	1	1021274-003	GUSSET
2	1	1021274-002	BASE
1	1	1021274-001	BRACKET

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.005	+ 2°
−	±.02	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Oszel DATE 8 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lombard 15 JAN 66
APPROVAL R. H. 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL

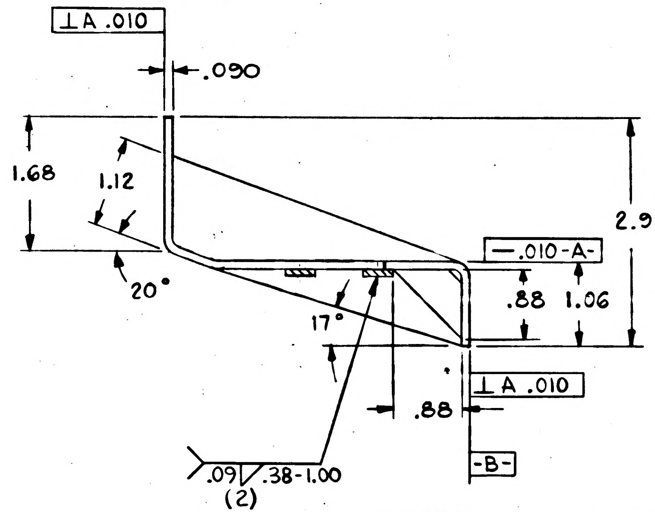
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

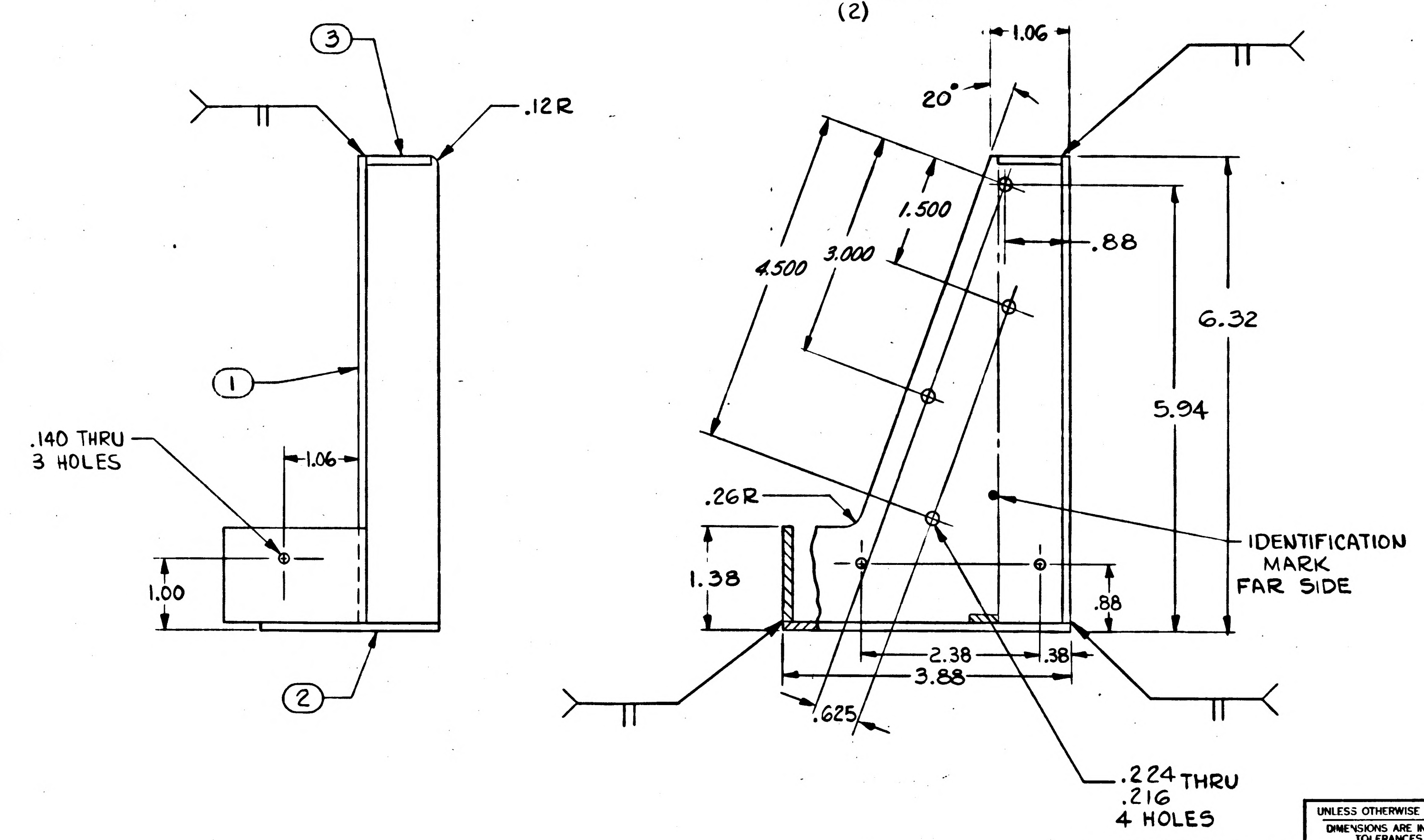
BRACKET, RH SUPPORT
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE D
1021274
SCALE FULL
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/8 TEMPER H32 (AL ALY 5052).
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. WELD PER MIL-W-8604.
5. FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS I, COLOR GRAY
6. ALL BEND RADII TO BE .12R.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. SURFACE "B" TO BE FREE OF ANODIZE.


⊥ A .010
.090
1.68
1.12
2.90
20°
—.010-A-
.88
1.06
17°
⊥ A .010
.88
.09 / .38-1.00
(2)
-B-


③
.12R
①
.140 THRU
3 HOLES
1.06
1.00
②
1.06
20°
1.500
3.000
4.500
.88
6.32
5.94
.26R
1.38
IDENTIFICATION
MARK
FAR SIDE
.88
2.38
.38
3.88
.625
.224
.216
THRU
4 HOLES

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			
	B	REVISED PER TDRR 26904		14 MAR 66	

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3	1	1021274-003	GUSSET
2	1	1021274-002	BASE
1	1	1021274-001	BRACKET

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021269	1021255-021
1021269	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.005	+ 1°
-	±.02	-

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Iszel DATE 8 DEC 65
CHECKED 15 JAN 66
APPROVAL 15 JAN 66
APPROVAL 1/18/66
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

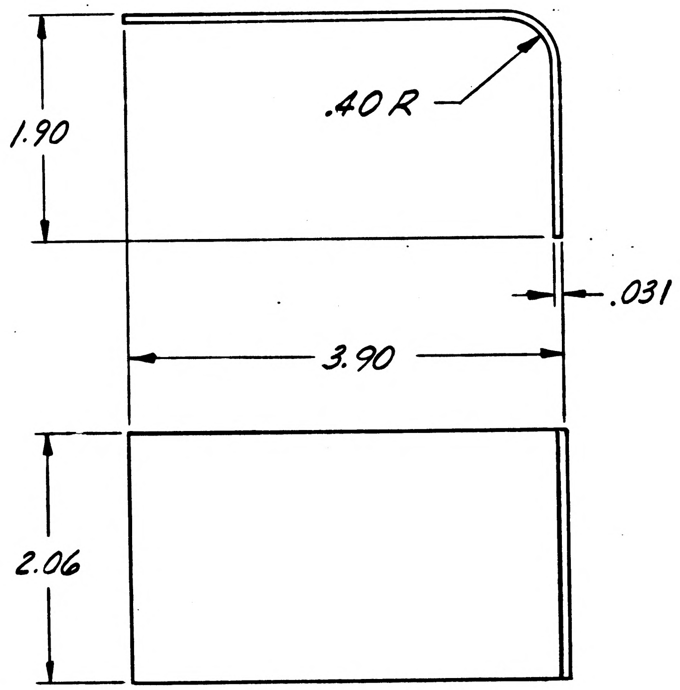
BRACKET, RH SUPPORT
(INSEPARABLE ASSEMBLY)

CODE IDENT NO. 80230
SIZE D
1021274
SCALE FULL
SHEET 1 OF 1

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (6061 AL ALY).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.



1021314	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN Kosmatka DATE 15 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkul 15 JAN 66
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, ANGLE-
LOWER

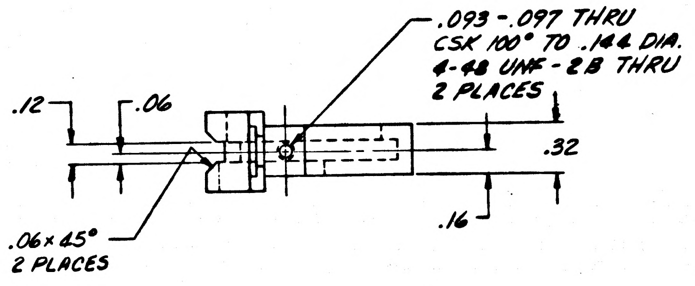
SIZE	CODE IDENT NO.	
C	80230	1021275
SCALE FULL		SHEET 1 OF 1

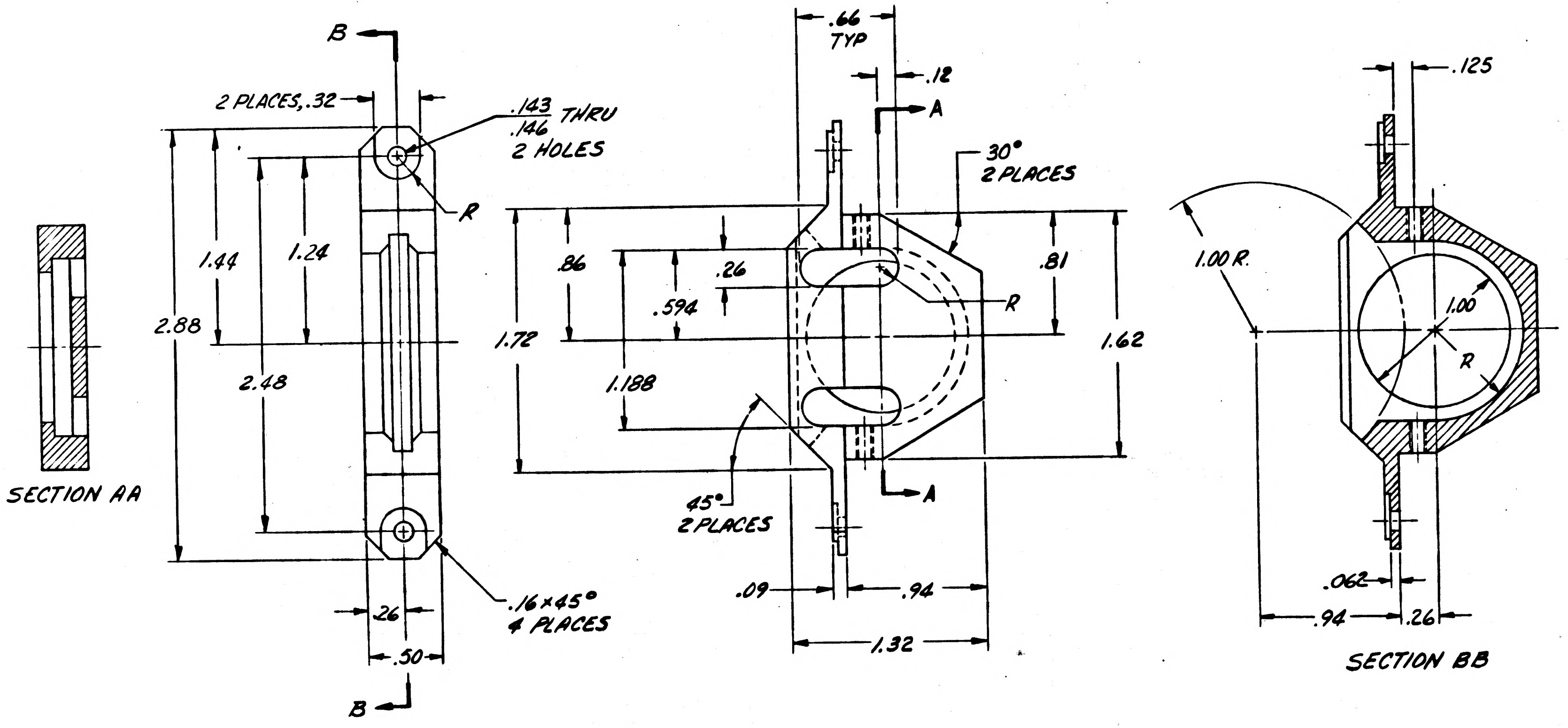
MIL-1002D B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (AL ALY 6061).
3. UNLESS OTHERWISE SPECIFIED:
   A. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
   B. SURFACE ROUGHNESS MUST NOT EXCEED 125/.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			


.093-.097 THRU
CSK 100° TO .144 DIA.
4-48 UNF-2B THRU
2 PLACES
.12
.06
.32
.16
.06×45°
2 PLACES


SECTION AA
B
B
2 PLACES, .32
.143
.146 THRU
2 HOLES
R
1.44
1.24
2.88
2.48
.26
.50
.16×45°
4 PLACES
.66
TYP
.12
A
A
30°
2 PLACES
.86
.26
.594
1.188
1.72
.81
R
1.62
45°
2 PLACES
.09
.94
1.32
.125
1.00 R.
1.00
R
.062
.94
.26
SECTION BB

1021314	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Kosmatka DATE 16 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lombard 16 JAN 66
CONTRACT 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

HOLDER, FILTER

SIZE D
CODE IDENT NO. 80230
1021277
SCALE 2:1
SHEET 1 OF 1

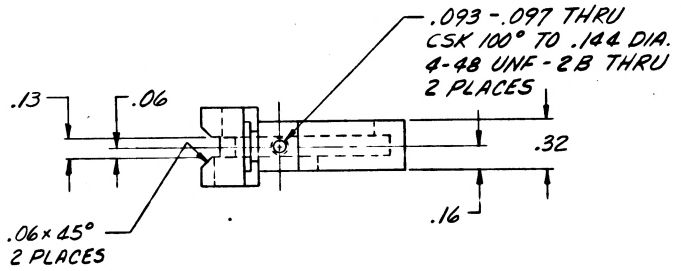
1021277

NOTES:

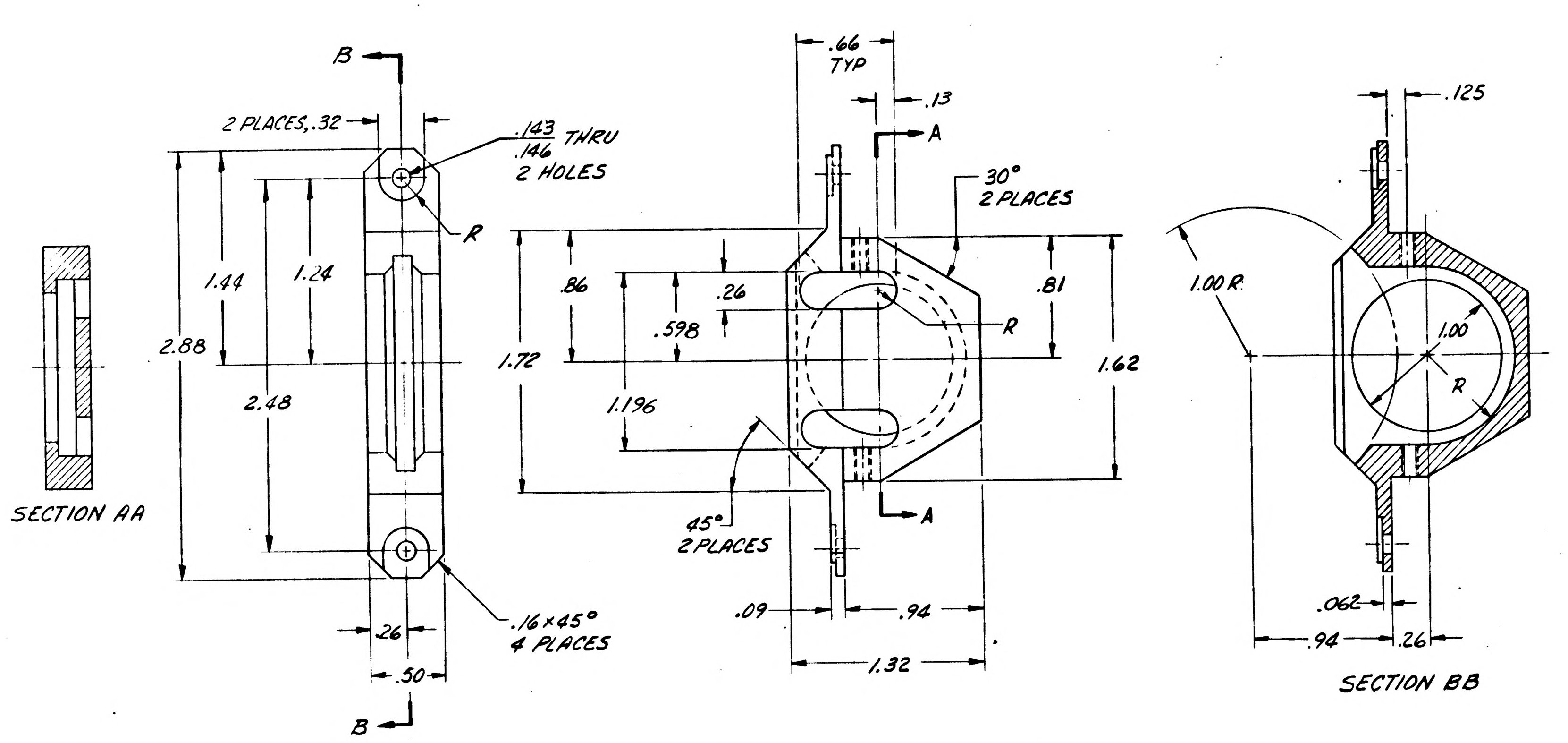
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (AL ALY 6061).
3. UNLESS OTHERWISE SPECIFIED:
   A. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
   B. SURFACE ROUGHNESS MUST NOT EXCEED 125/.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 32			
	B	REVISED PER TDRR 26900		14 MAR 66	R.W.T.



.093-.097 THRU
CSK 100° TO .144 DIA.
4-48 UNF-2B THRU
2 PLACES
.13
.06
.32
.16
.06 × 45°
2 PLACES



B
2 PLACES, .32
.143
.146 THRU
2 HOLES
R
1.44
1.24
2.88
2.48
.16 × 45°
4 PLACES
.26
.50
B
SECTION AA
.66
TYP
.13
A
30°
2 PLACES
.86
.26
.598
1.72
1.196
R
.81
1.62
45°
2 PLACES
A
.09
.94
1.32
.125
1.00 R
1.00
R
.062
.94
.26
SECTION BB

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		
2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES
± .02	± .005	± 2°

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

APPROVAL

NEXT ASSY	USED ON
1021314	1021255-021
1021314	1021255-01

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Kosmatka DATE 16 DEC 65
CHECKED
APPROVAL 16 JAN
CONTRACT
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

HOLDER, FILTER

SIZE D CODE IDENT NO. 80230 1021277

SCALE 2:1 SHEET 1 OF 1

1021277

MIL-1068D D

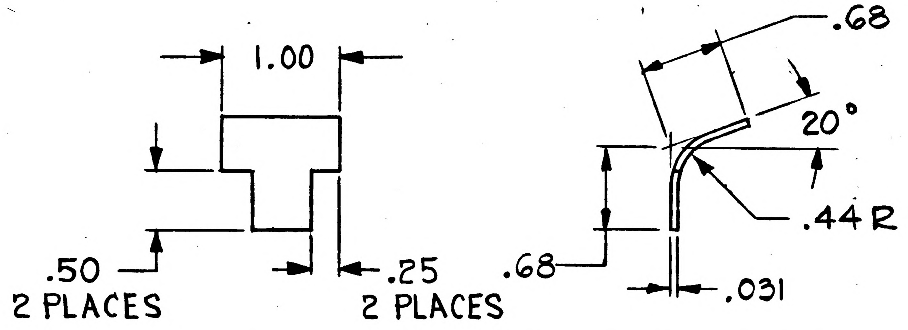
1021280 | B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS Ⓜ PRESCRIBED BY MIL-D-70327.
2. MATERIAL: AL ALY PER QQ-A-250/11 TEMPER T6 (AL ALY 6061).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, CLASS I COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS 25321

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	INITIAL RELEASE CLASS A PER TDRR 25321			
B	REVISED PER TDRR 27398		30MAR 66	DKD



1021314	1021255-021	
1021314	1021255-011	
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.02	+ 2°
−	±.005	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT

DRAWN Kosmatka DATE 18 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E Lemkin 16 JAN 66
APPROVAL R.H. Ines 1/18/66
A. C. METZGER
NASA APPROVAL
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, ANGLE-
STRIKE

CODE IDENT NO. 80230
SIZE B
1021280
SCALE FULL
SHEET 1 OF 1

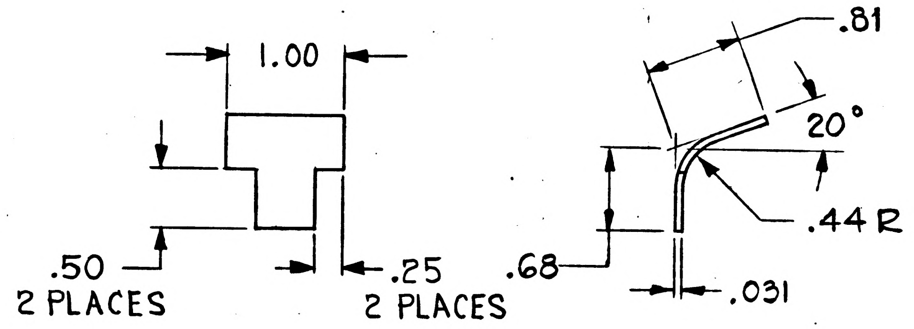
MIL 10778-D 11-16-64

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327. Ⓜ
2. MATERIAL: AL ALY PER QQ-A-250/11 TEMPER T6 (AL ALY 6061). Ⓜ
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, CLASS I COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS 25321

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
A	INITIAL RELEASE CLASS A PER TDRR 25321			
B	REVISED PER TDRR 27398		30 MAR 66	DKD
C	REVISED PER TDRR 28224		3 MAY 66	JIMP JAC



1021314	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.02	+ 2°
−	±.005	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT

DRAWN Koswatta DATE 18 DEC 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkuil 16 JAN 66
APPROVAL R.H. Inas 1/18/66
NASA APPROVAL
MIT APPROVAL 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, ANGLE-
STRIKE

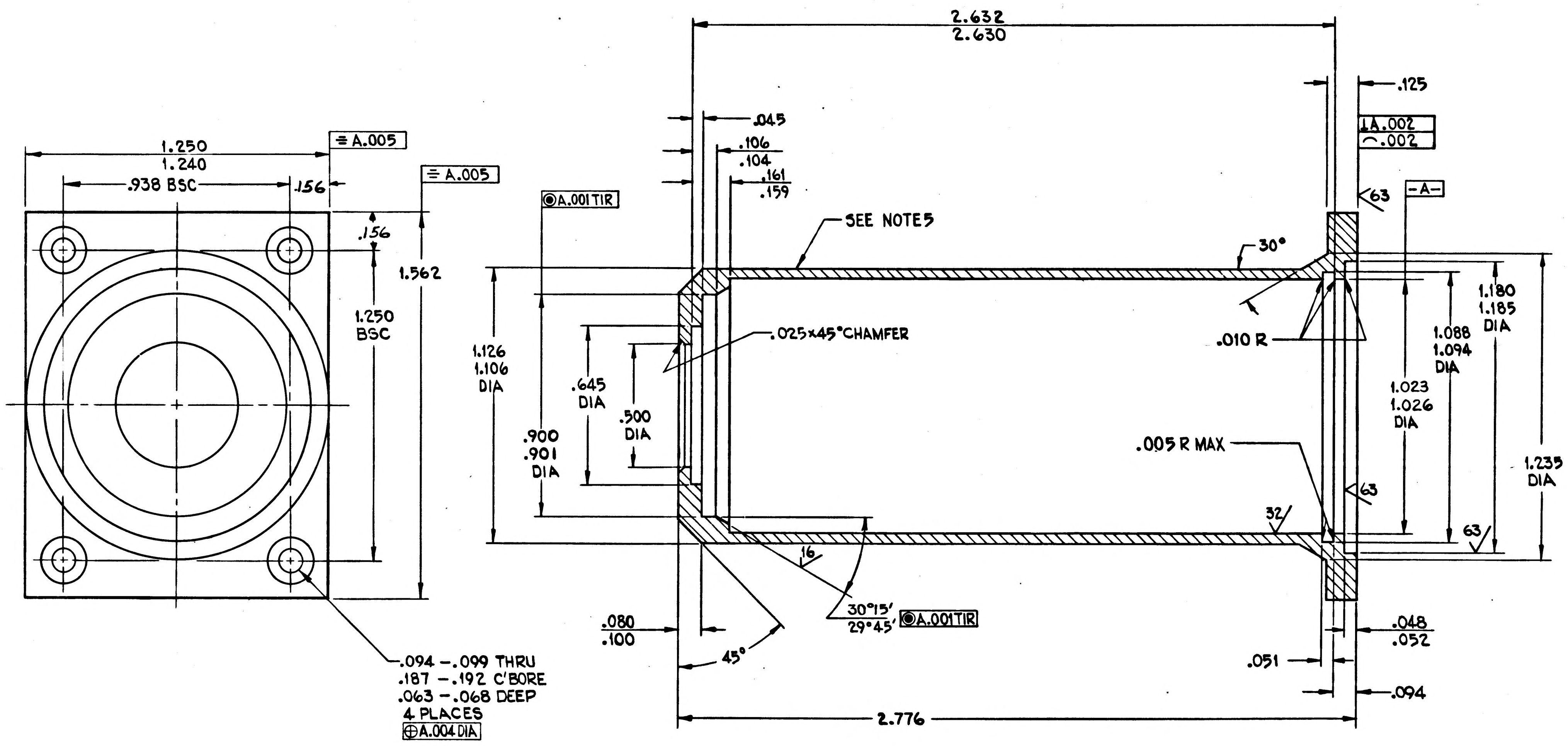
CODE IDENT NO. 80230
SIZE B
1021280
SCALE FULL
SHEET 1 OF 1

MIL 1077B-D 11-16-64

REVISIONS		TDRR 25101			
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-225/6, 2024-T4 AL ALY.
3. UNLESS OTHERWISE SPECIFIED:
   - A. ALL DIA'S TO BE ◎A.005TIR.
   - B. ALL SURFACES TO BE ∥A.005 OR ⊥A.005.
   - C. SURFACE ROUGHNESS MUST NOT EXCEED 125√.
   - D. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
4. FINISH: MIL-A-8625, TYPE I, ANODIZE, EXCEPT C'BORE FACES TO BE CHEMICAL FILM PER MIL-C-5541, CLASS 3.
5. IDENTIFY USING DRAWING NO. PER ND1002019.



1.250
1.240
.938 BSC
.156
≡ A.005
≡ A.005
.156
1.562
1.250
BSC
.094 - .099 THRU
.187 - .192 C'BORE
.063 - .068 DEEP
4 PLACES
⊕A.004 DIA
2.632
2.630
.045
.106
.104
.161
.159
◎A.001TIR
SEE NOTE 5
.025×45° CHAMFER
1.126
1.106
DIA
.645
DIA
.500
DIA
.900
.901
DIA
16
.080
.100
45°
30°15'
29°45'
◎A.001TIR
2.776
.125
⊥A.002
⌒.002
63
-A-
30°
.010 R
.005 R MAX
32
63
63
1.180
1.185
DIA
1.088
1.094
DIA
1.023
1.026
DIA
1.235
DIA
.048
.052
.051
.094

1021285-011	1021302-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. H. Bebb DATE 18 Dec 65
CHECKED Gyrmoure 20 DEC 65
APPROVAL 1/6/66
CONTRACT NAS9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING

SIZE D
CODE IDENT NO. 80230
1021283
SCALE 4:1
SHEET 1 OF 1

RR Kupfer 20 Dec 65

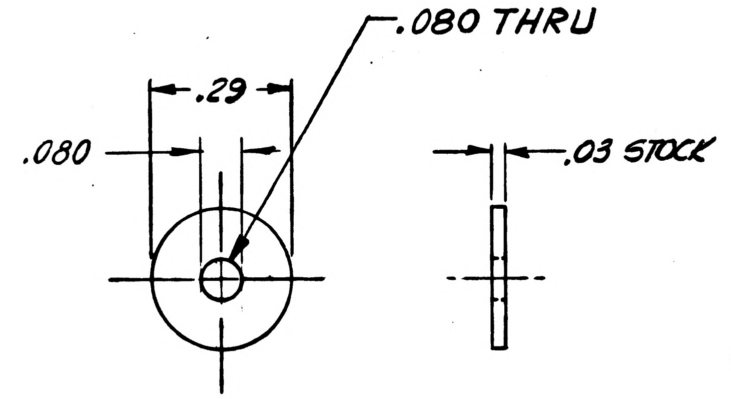
1021287

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND1002019.
3. MATERIAL: ZZ-R-765 SILICONE RUBBER, CLASS III GRADE 50, COLOR GREY NO. 36231 PER FED-STD-595.

REVISIONS 25308

SYM	DESCRIPTION	CHG NO.	DATE	APPD.



1021302-011	1021304-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
± —	±.005 ±.02	± —

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 3

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DWG. NO. CONTRACT

DRAWN 12 DEC 65 DATE

CHECKED M. Manning 22 DEC 65

APPROVAL J. Petrange 5 JAN 66

APPROVAL 1-11-66

NASA APPROVAL A. C. METZGER

MIT APPROVAL 12 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GASKET, SCREW
CDU FRAME ASSEMBLY

CODE IDENT NO.	SIZE	
80230	B	1021287

SCALE 4:1

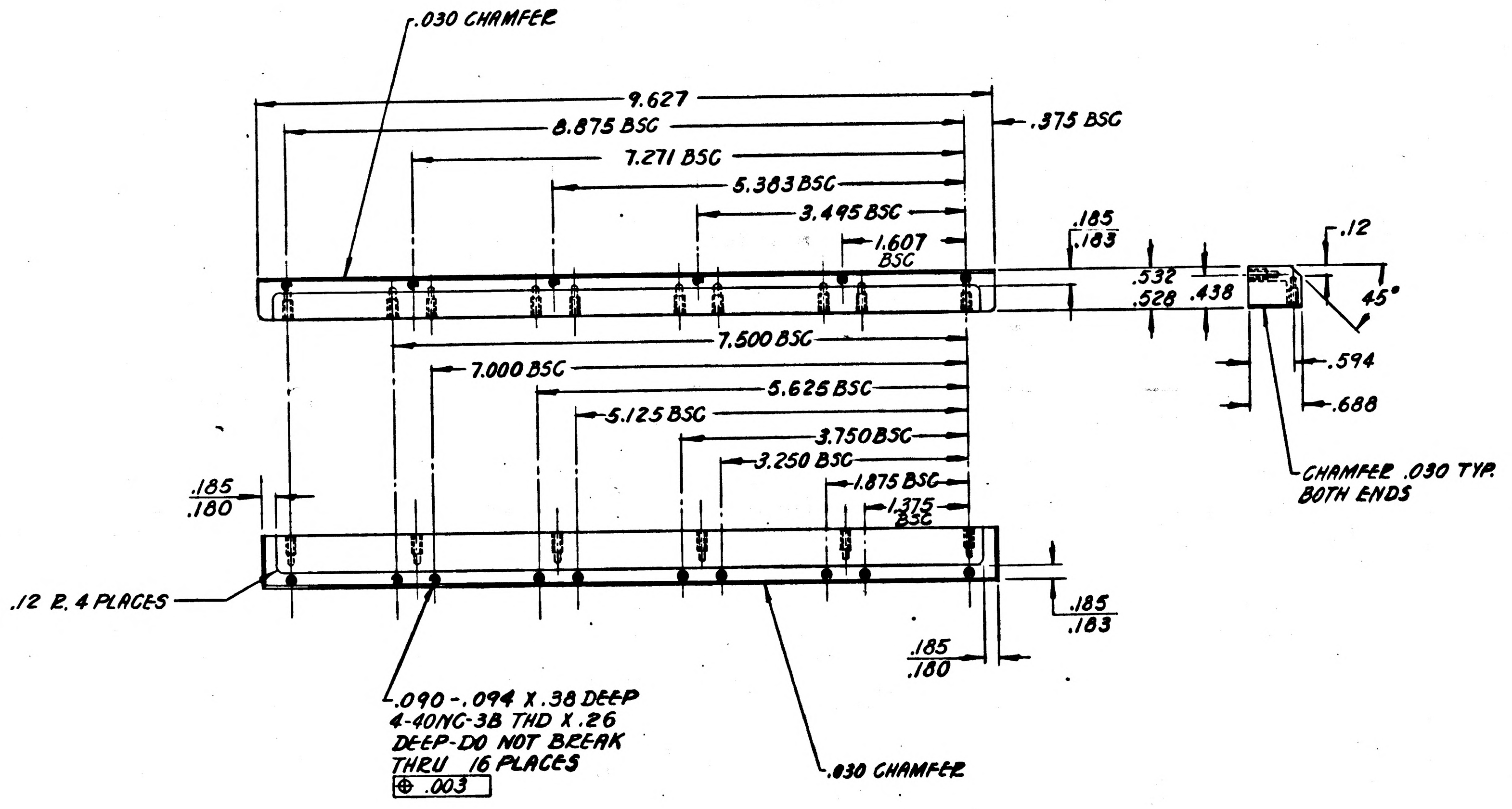
SHEET 1 OF 1

Charleston 22 DEC 65

MIL 10778-D 11-16-64

REVISIONS		25 308			
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CHANGE		1-12-66	

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: AL ALLOY QQ-A-225/8 TEMPER T651
3. FINISH: ANODIZE PER MIL-A-8625 TYPE I CLEAR.
4. MUST BE FREE FROM BURRS & SHARP EDGES.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. SURFACE ROUGHNESS NOT TO EXCEED $\overset{125}{\checkmark}$.


.030 CHAMFER
9.627
8.875 BSC
7.271 BSC
5.383 BSC
3.495 BSC
1.607 BSC
.375 BSC
.185
.183
.532
.528
.438
.12
45°
.594
.688
CHAMFER .030 TYP. BOTH ENDS
7.500 BSC
7.000 BSC
5.625 BSC
5.125 BSC
3.750 BSC
3.250 BSC
1.875 BSC
1.375 BSC
.185
.180
.12 R. 4 PLACES
.185
.183
.185
.180
.090-.094 X .38 DEEP
4-40NC-3B THD X .26
DEEP-DO NOT BREAK
THRU 16 PLACES
⊕ .003
.030 CHAMFER

1021302-011	1021304-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.005	± 1°
−	±.01	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2
Charleston 22 DEC. 65
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN L. Litzow 20 DEC. 1965 DATE
CHECKED W. Diehl 22 DEC. 65
APPROVAL J. Petersen 5.1.44
APPROVAL F. J. Siever 1-11-66
A. C. METZGER
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

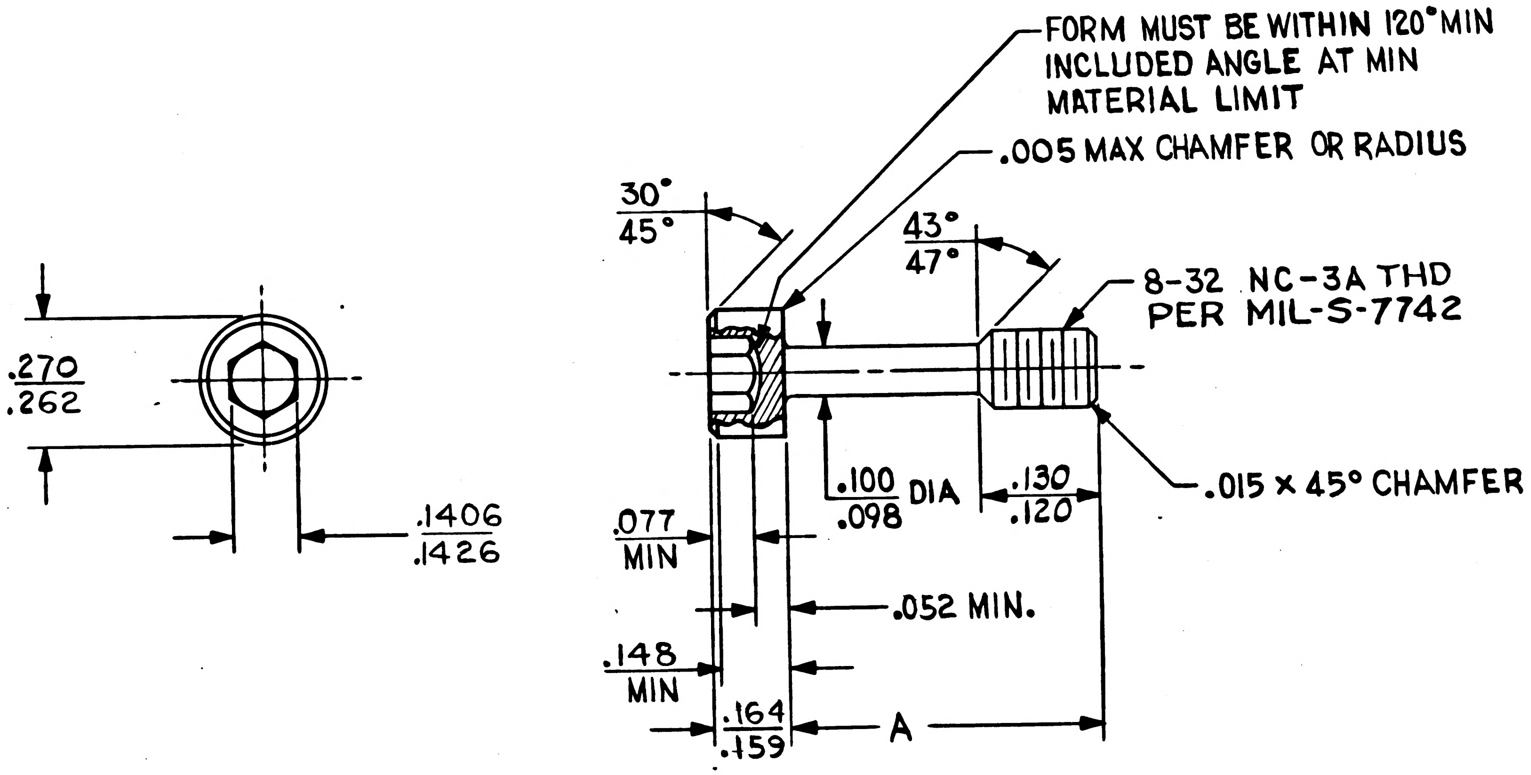
CAP - REAR COVER
CDU FRAME ASSEMBLY

CODE IDENT NO.	SIZE	
80230	D	1021288
SCALE 1:1		SHEET 1 OF 1

1021288

REVISIONS 25308					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CHANGE		1-12-66	

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: STAINLESS STEEL PER QQ-S-763, CLASS 303, COND A, CF OR MAY BE MADE FROM MS16995-28 AND, OR MS 16995-25.
3. FINISH: PASSIVATE PER MIL-F-14072 (SIGC) FINISH E300.
4. UNLESS OTHERWISE SPECIFIED:
   A. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
   B. SURFACE ROUGHNESS MUST NOT EXCEED $\sqrt[125]{}$.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.


FORM MUST BE WITHIN 120° MIN INCLUDED ANGLE AT MIN MATERIAL LIMIT
.005 MAX CHAMFER OR RADIUS
30° / 45°
43° / 47°
8-32 NC-3A THD PER MIL-S-7742
.270 / .262
.1406 / .1426
.077 MIN
.100 / .098 DIA
.130 / .120
.015 × 45° CHAMFER
.052 MIN.
.148 MIN
.164 / .159
A

PART NUMBER	DIM "A"
1021289-001	.375
1021289-002	.750

NEXT ASSY	USED ON
1021302-011	1021304-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ — –	± — ±.005	+ 2° –

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN P. J. Fleuda DATE 20-DEC-65
CHECKED M. Manning 22 DEC 65
APPROVAL J. Petrany 5 JAN 66
APPROVAL
NASA APPROVAL A. C. METZGER
MIT APPROVAL 13 Jan 66
22 DEC 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

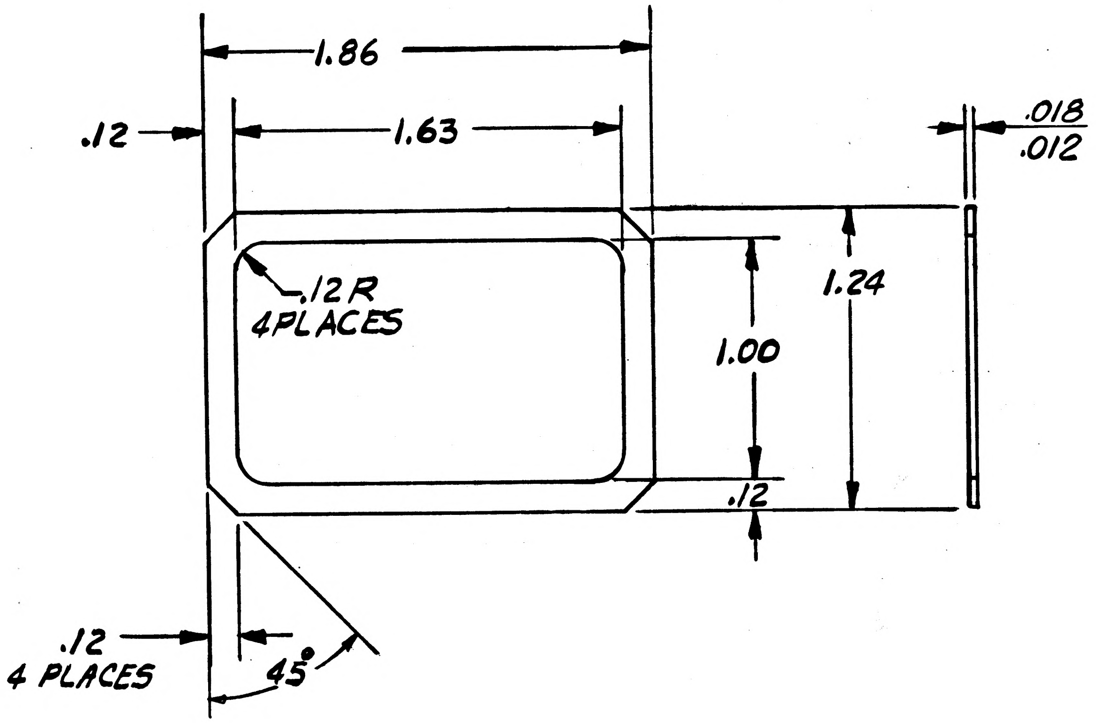
SCREW, CAP, SOCKET HEAD - CAPTIVE

CODE IDENT NO. 80230
SIZE C
1021289
SCALE 4:1
SHEET OF

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ZZ-R-765 SILICONE RUBBER, CLASS III, GRADE 50, COLOR GREY, NO. 36231 PER FED-STD-595.
3. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS		25308		
SYM	ZONE	DESCRIPTION / CHG NO.	DATE	APPD.



1021302-011	1021304-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ ___	±.005	+ 1°
−	±.01	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN 20-DEC-65 DATE
CHECKED 22 DEC 65
APPROVAL 5 JAN 66
APPROVAL 1-11-66
A. C. METZGER
NASA APPROVAL
MIT APPROVAL 13 Jan 66

22-DEC 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GASKET-WINDOW
CDU FRAME ASSEMBLY

CODE IDENT NO.	SIZE	
80230	C	1021290
SCALE 2:1		SHEET 1 OF 1

MIL 1077C—P

1021294

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CHANGE		1-12-66	

REVISIONS 25308

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

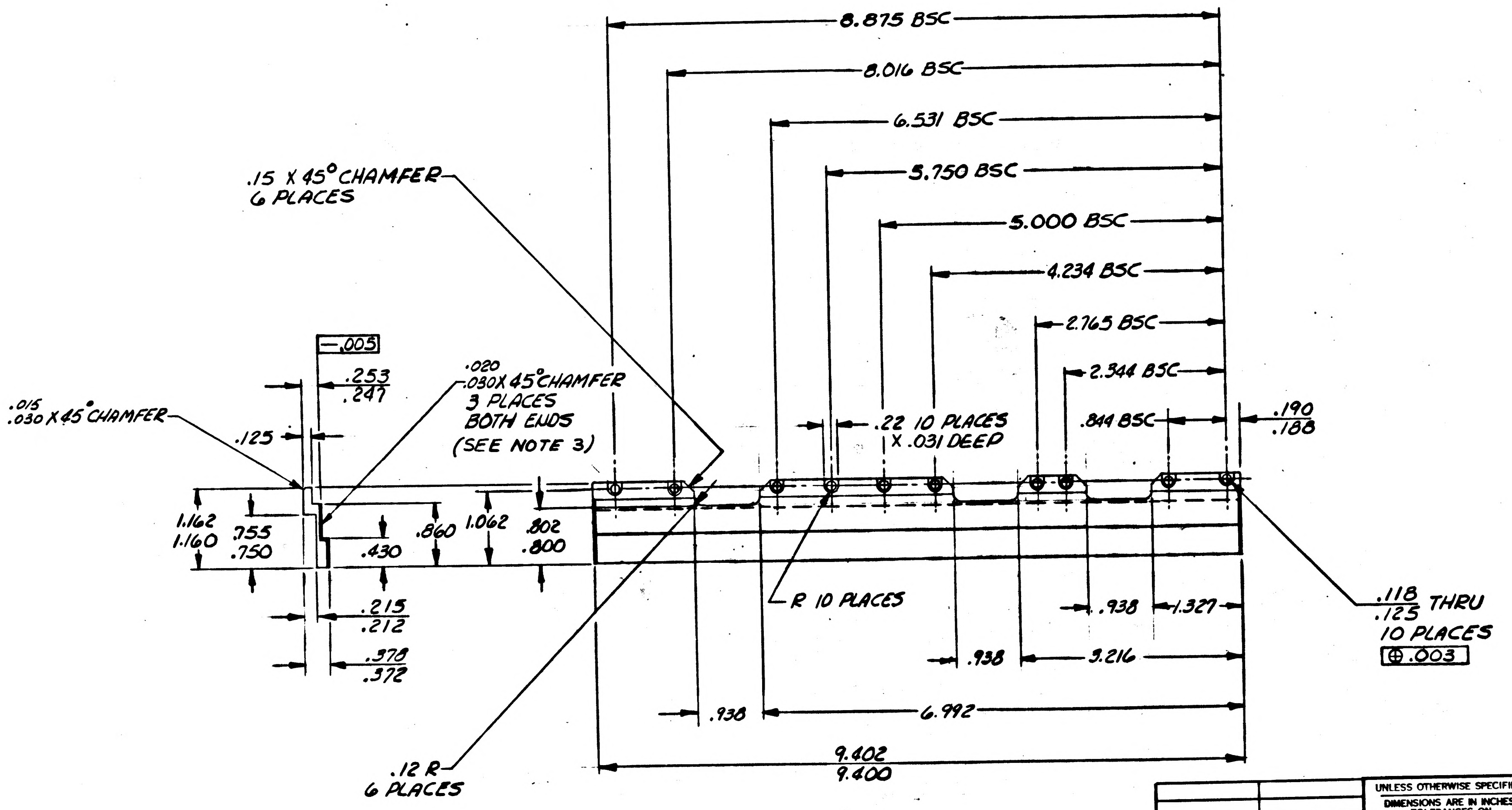
2. MATERIAL: QQ-A-250/11 TEMPER T651, AL ALY.

3. FINISH: ANODIZE PER MIL-A-8625, TYPE I, CLEAR, EXCEPT DO NOT ANODIZE THREE 45° CHAMFERS AT BOTH ENDS.

4. SURFACE ROUGHNESS MUST NOT EXCEED 63/

5. MUST BE FREE FROM BURRS AND SHARP CORNERS.

6. IDENTIFY USING DRAWING NUMBER PER ND1002019.


8.875 BSC
8.016 BSC
6.531 BSC
5.750 BSC
5.000 BSC
4.234 BSC
2.765 BSC
2.344 BSC
.844 BSC
.15 X 45° CHAMFER
6 PLACES
.005
.253
.247
.020
.030 X 45° CHAMFER
3 PLACES
BOTH ENDS
(SEE NOTE 3)
.015
.030 X 45° CHAMFER
.125
.22 10 PLACES
X .031 DEEP
.190
.188
1.162
1.160
.755
.750
.430
.860
1.062
.802
.800
R 10 PLACES
.215
.212
.378
.372
.938
1.327
.938
3.216
.938
6.992
9.402
9.400
.118
.125 THRU
10 PLACES
⊕ .003
.12 R
6 PLACES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	±.005	±1°
−	±.01	— —

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

NEXT ASSY	USED ON
1021302-011	1021304-011

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN A. J. Fluder DATE 20-DEC-65
CHECKED Burke 28 DEC 65
APPROVAL J. Strange 5 JAN 66
APPROVAL 1-11-66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 13 Jan 66

Charleston 6 JAN 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

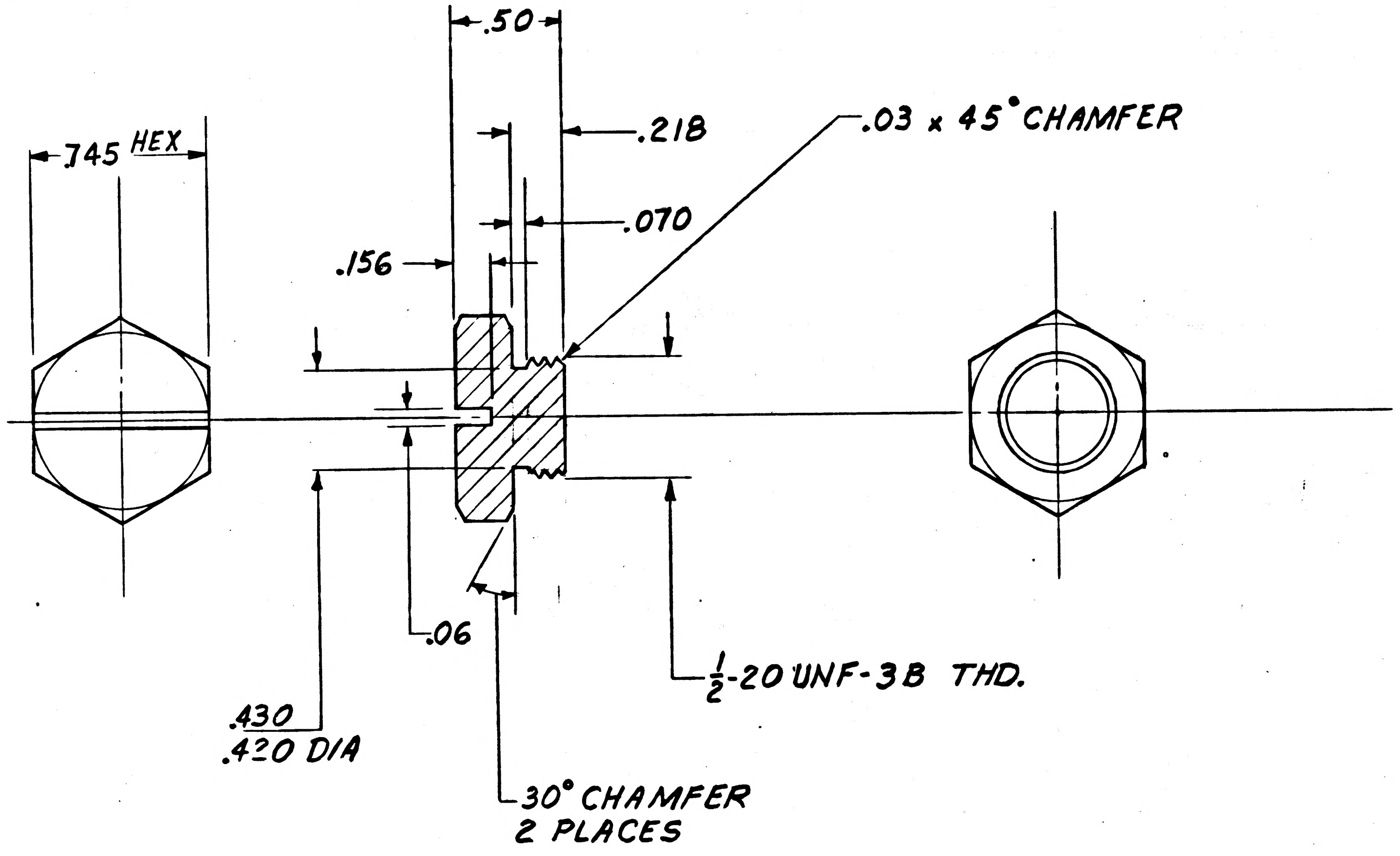
EXTENSION STRIP-
RIGHT HAND SIDE PLATE
CDU FRAME ASSEMBLY

CODE IDENT NO. 80230
SIZE D
1021294
SCALE 1:1
SHEET 1 OF 1

REVISIONS 25368				
SYM	ZONE	DESCRIPTION	DATE	APPD.
		CHG NO.		

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED B MIL-D-70327.
2. MATERIAL: QQ-S-763 SST 303 COND. A. CF
3. UNLESS OTHERWISE SPECIFIED:
   MUST BE FREE FROM BURRS AND SHARP CORNERS.
   ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
4. FINISH: MIL-F-14072 (SIG C) FINISH E300 PASSIVATE.
5. IDENTIFY USING DRAWING NUMBER PER ND 1002019.



1021302-011	1021304-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ −	±.005	±2°
−	±.02	

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN Fride DATE 20 DEC 65
CHECKED W. Diehl 22 Dec. '65
APPROVAL J. Petrangs 5 JAN 66
APPROVAL J.J. Sisaco 1-11-66
A. C. METZGER
NASA APPROVAL
MIT APPROVAL W Kupfer 13 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

PLUG-DESICCATOR,
CDU FRAME ASSEMBLY

CODE IDENT NO.	SIZE	
80230	C	1021295
SCALE 2:1		SHEET 1 OF 1

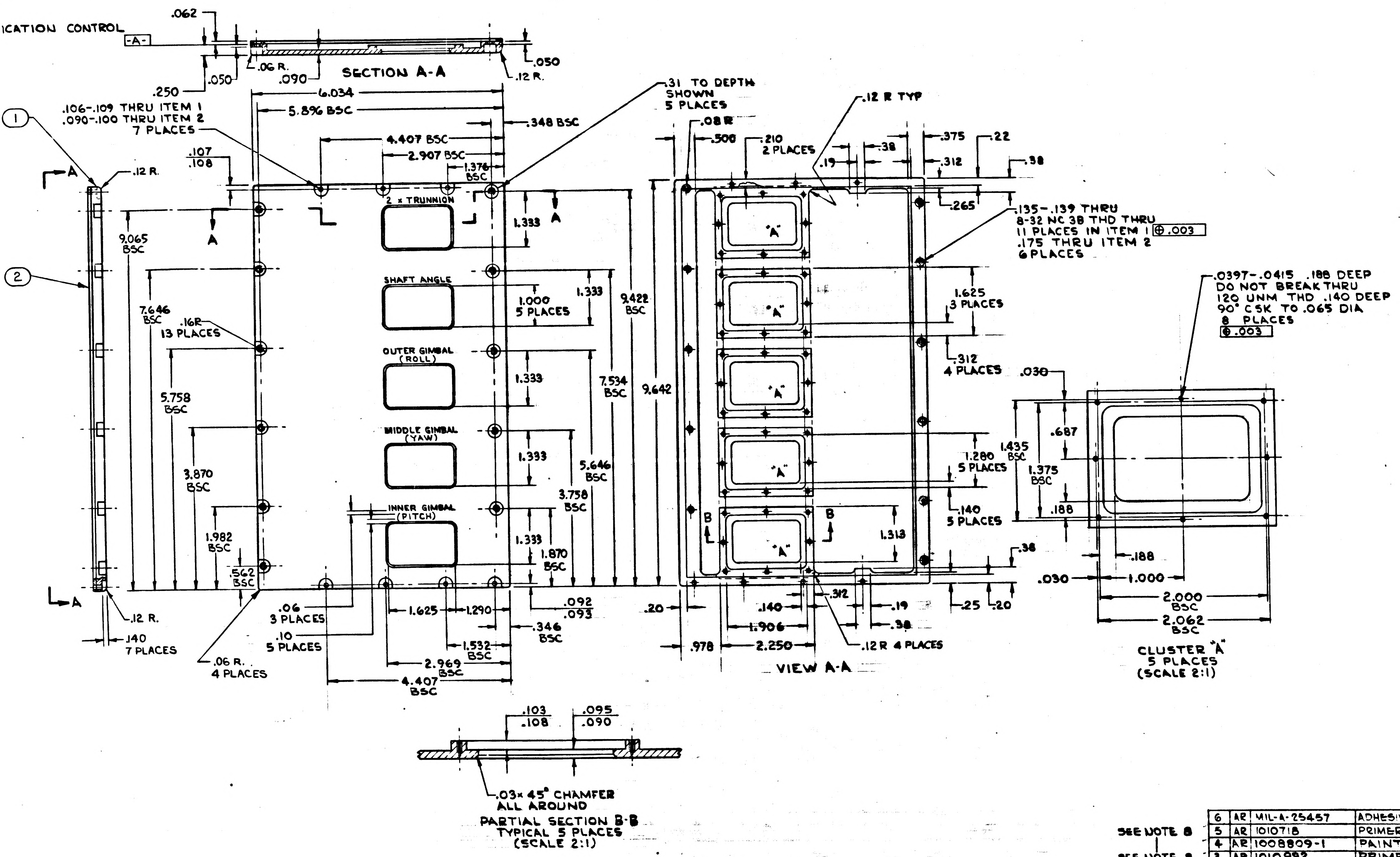
MIL 1077C—P

Charleston 22 DEC 65

REVISIONS		25308			
ZONE	LTR	DESCRIPTION		DATE	APPROVED
A		INITIAL RELEASE CHANGE	CHG. NO.	1-12-66	

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL:
   A. ALUMINUM ALLOY PER QQ-A-250/11 TEMPER T651.
   B. ZZ-R-765 SILICONE RUBBER, CLASS III GRADE 50, COLOR GREY, NO.36231 PER FED STD 595.
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. ITEM 1 ONLY - TO BE ANODIZED PER MIL-A-8625 TYPE I, CLEAR, ALL OVER. PAINT PER ND 1002279 USING ITEM 3 AND ONE COAT OF ITEM 4; EXCEPT, DO NOT PAINT SURFACE -A- AND RECESSED AREAS BELOW SURFACE -A-.
5. BOND ITEM 2 TO ITEM 1 PER ND1002151 USING ITEMS 5 AND 6.
6. CHARACTERS TO BE SILK SCREENED PER ND1002112, .12 HIGH FUTURA DEMIBOLD PER ND1002122, CENTRALIZE AS SHOWN.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.


.062
-A-
.250
.050
.06 R.
.090
SECTION A-A
.050
.12 R.
①
.106-.109 THRU ITEM 1
.090-.100 THRU ITEM 2
7 PLACES
②
6.034
5.896 BSC
.348 BSC
4.407 BSC
2.907 BSC
1.376 BSC
.107
.108
.12 R.
A
A
A
2 x TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
MIDDLE GIMBAL (YAW)
INNER GIMBAL (PITCH)
9.065 BSC
7.646 BSC
.16R 13 PLACES
5.758 BSC
3.870 BSC
1.982 BSC
.562 BSC
1.333
1.000 5 PLACES
9.422 BSC
7.534 BSC
9.642
5.646 BSC
3.758 BSC
1.870 BSC
.092
.093
.346 BSC
.06 3 PLACES
.10 5 PLACES
1.625
1.290
1.532 BSC
2.969 BSC
4.407 BSC
.06 R. 4 PLACES
.12 R.
.140 7 PLACES
.31 TO DEPTH SHOWN 5 PLACES
.08 R
.500
.210 2 PLACES
.12 R TYP
.19
.38
.375
.312
.22
.38
.265
.135-.139 THRU 8-32 NC 3B THD THRU 11 PLACES IN ITEM 1 ⊕ .003
.175 THRU ITEM 2 6 PLACES
"A"
1.625 3 PLACES
.312 4 PLACES
1.435 BSC
1.280 BSC 5 PLACES
.140 5 PLACES
1.313
B
B
.38
.20
.140
.312
.19
.38
.25
.20
1.906
.978
2.250
.12 R 4 PLACES
VIEW A-A
.0397-.0415 .188 DEEP DO NOT BREAK THRU 120 UNM THD .140 DEEP 90° CSK TO .065 DIA 8 PLACES ⊕ .003
.030
.687
1.375 BSC
.188
.188
1.000
.030
2.000 BSC
2.062 BSC
CLUSTER "A" 5 PLACES (SCALE 2:1)
.103
.108
.095
.090
.03 x 45° CHAMFER ALL AROUND
PARTIAL SECTION B-B TYPICAL 5 PLACES (SCALE 2:1)

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	6	AR	MIL-A-25457	ADHESIVE, EPOXY (2 PARTS)
SEE NOTE 8	5	AR	1010718	PRIMER, ADHESIVE
	4	AR	1008809-1	PAINT, EPOXY
SEE NOTE 8	3	AR	1010992	PRIMER
SEE NOTE 2B	2	1	1021299-002	GASKET
SEE NOTE 2A	1	1	1021299-001	PANEL

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021302-011	1021304-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .01
3 PLACE DECIMALS ± .005
ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE 21 DEC 65
CHECKED 3 JAN 65
APPROVAL
CONTRACT NAS9-497
A. C. METZGER
NASA APPROVAL
MIT APPROVAL

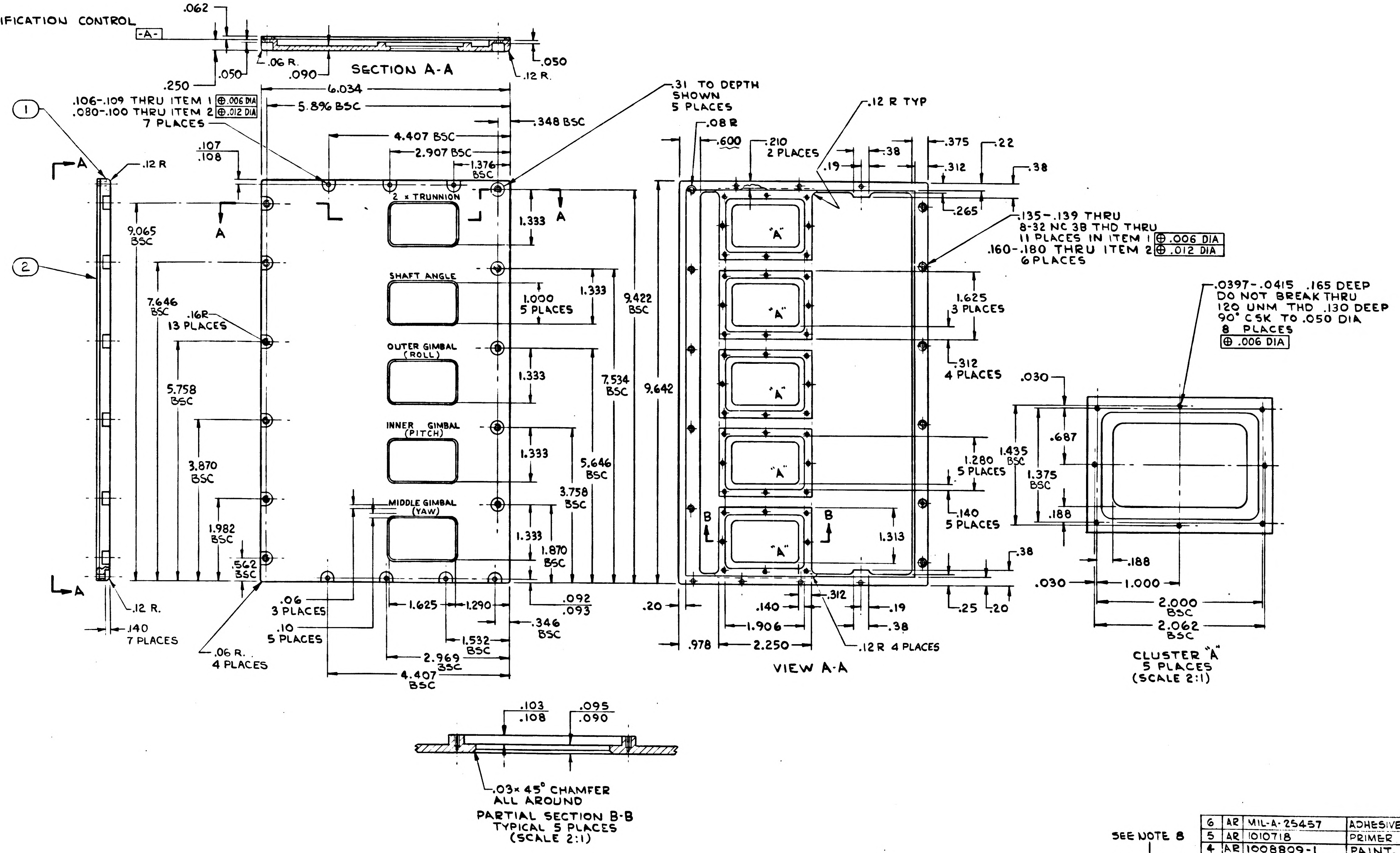
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

PANEL
(INSEPARABLE ASSEMBLY)
CDU FRAME ASSEMBLY

SIZE E
CODE IDENT NO. 80230
1021299
SCALE FULL
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL:
   A. ALUMINUM ALLOY PER QQ-A-250/11 TEMPER T651.
   B. ZZ-R-765 SILICONE RUBBER, CLASS III GRADE 50, COLOR GREY.
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. ITEM 1 ONLY - TO BE ANODIZED PER MIL-A-8625 TYPE I, CLEAR, ALL OVER. PAINT PER ND 1002279 USING ITEM 3 AND ONE COAT OF ITEM 4, EXCEPT. DO NOT PAINT SURFACE -A- AND RECESSED AREAS BELOW SURFACE -A-.
5. BOND ITEM 2 TO ITEM 1 PER ND1002151 USING ITEMS 5 AND 6.
6. CHARACTERS TO BE SILK SCREENED PER ND1002112, .12 HIGH FUTURA DEMIBOLD WHITE PER ND1002122, CENTRALIZE AS SHOWN.
7. IDENTIFY USING DRAWING NUMBER PER ND1002019.
8. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.


-A-
.062
.050
.250
.06 R.
.090
SECTION A-A
.050
.12 R.
6.034
5.896 BSC
.348 BSC
.106-.109 THRU ITEM 1 ⊕ .006 DIA
.080-.100 THRU ITEM 2 ⊕ .012 DIA
7 PLACES
①
②
4.407 BSC
2.907 BSC
1.376 BSC
.107
.108
A
.12 R
2 × TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
INNER GIMBAL (PITCH)
MIDDLE GIMBAL (YAW)
9.065 BSC
7.646 BSC
.16R 13 PLACES
5.758 BSC
3.870 BSC
1.982 BSC
.562 BSC
1.333
1.000 5 PLACES
9.422 BSC
7.534 BSC
9.642
5.646 BSC
3.758 BSC
1.870 BSC
.12 R.
.140 7 PLACES
.06 R. 4 PLACES
.06 3 PLACES
.10 5 PLACES
1.625
1.290
1.532 BSC
2.969 BSC
4.407 BSC
.092
.093
.346 BSC
.31 TO DEPTH SHOWN 5 PLACES
.08 R
.600
.210 2 PLACES
.12 R TYP
.19
.38
.375
.312
.22
.265
.135-.139 THRU
8-32 NC 3B THD THRU
11 PLACES IN ITEM 1 ⊕ .006 DIA
.160-.180 THRU ITEM 2 ⊕ .012 DIA
6 PLACES
"A"
1.625 3 PLACES
.312 4 PLACES
1.280 5 PLACES
.140 5 PLACES
1.313
B
.20
.978
.140
1.906
2.250
.312
.12 R 4 PLACES
.25
VIEW A-A
.0397-.0415 .165 DEEP
DO NOT BREAK THRU
120 UNM THD .130 DEEP
90° CSK TO .050 DIA
8 PLACES
⊕ .006 DIA
.030
.687
1.435 BSC
1.375 BSC
.188
1.000
2.000 BSC
2.062 BSC
CLUSTER "A" 5 PLACES (SCALE 2:1)
.103
.108
.095
.090
.03 × 45° CHAMFER ALL AROUND
PARTIAL SECTION B-B TYPICAL 5 PLACES (SCALE 2:1)

REVISIONS 25305

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
A		INITIAL RELEASE CHANGE		1-2-66	
B		REVISED PER TDRR-262 3		24-FEB-66	B wA

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	6	AR	MIL-A-25457	ADHESIVE, EPOXY (2 PARTS)
SEE NOTE 8	5	AR	1010718	PRIMER ADHESIVE
	4	AR	1008809-1	PAINT, EPOXY
SEE NOTE 8	3	AR	1010992	PRIMER
SEE NOTE 2B	2	1	1021299-002	GASKET
SEE NOTE 2A	1	1	1021299-001	PANEL

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021302-011	1021304-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .01
3 PLACE DECIMALS ± .005
ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 2 DEC 65
CHECKED 3 JAN 65
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PANEL
(INSEPARABLE ASSEMBLY)
CDU FRAME ASSEMBLY

SIZE E
CODE IDENT NO. 80230
1021299
SCALE FULL
SHEET 1 OF 1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

2. MATERIAL:
   A. ALUMINUM ALLOY PER QQ-A-250/11 TEMPER T651.

   B. ZZ-R-765 SILICONE RUBBER, CLASS III GRADE 50, COLOR GREY.

3. MUST BE FREE FROM BURRS AND SHARP EDGES.

4. TEM 1 ONLY - TO BE ANODIZED PER MIL-A-8625 TYPE I, CLEAR, ALL OVER. PAINT PER ND 1002279 USING ITEM 3 AND ONE COAT OF ITEM 4, EXCEPT, DO NOT PAINT SURFACE -A- AND RECESSED AREAS BELOW SURFACE -A-.

5. BOND ITEM 2 TO ITEM 1 PER ND1002151 USING ITEMS 5 AND 6.

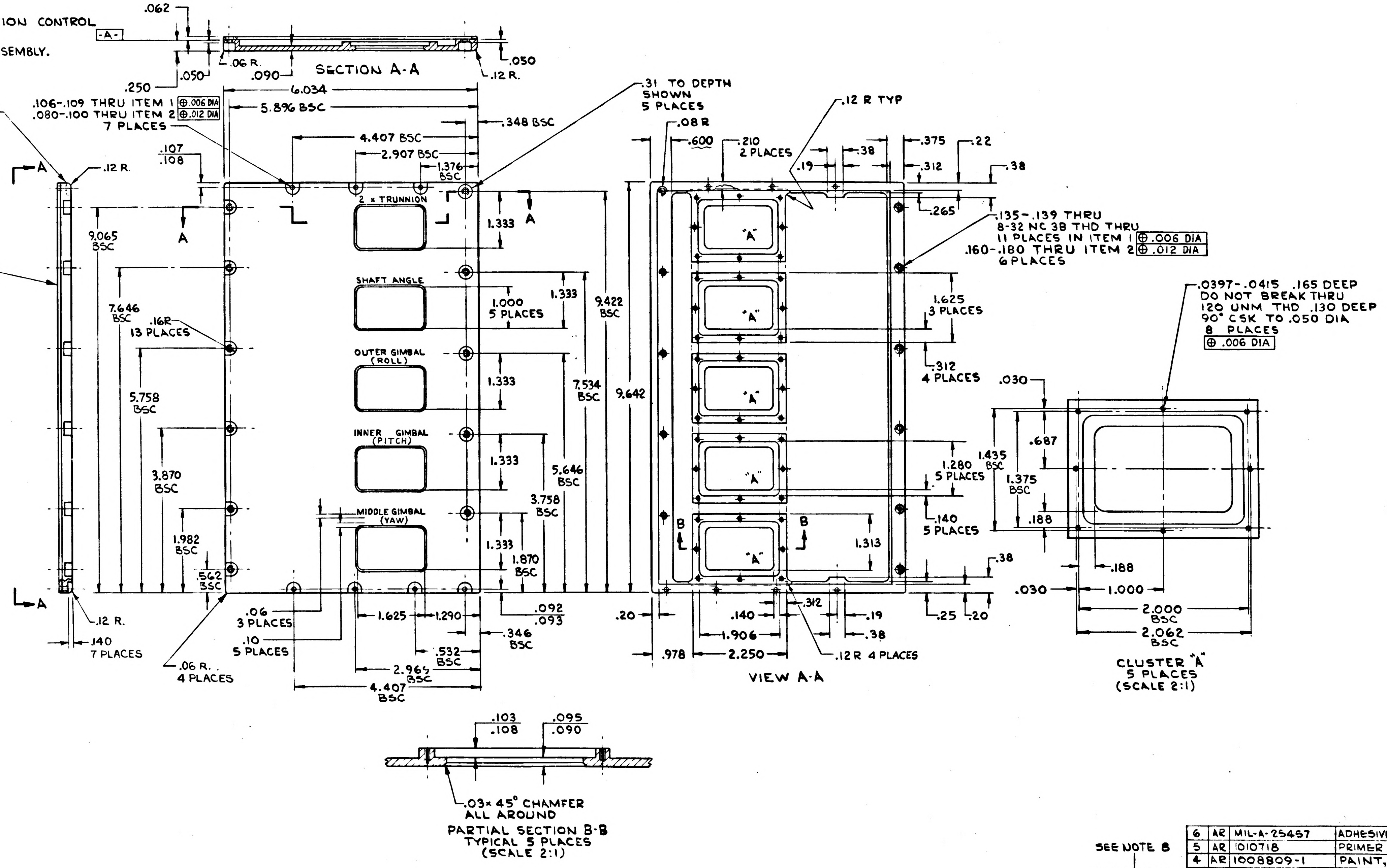
6. CHARACTERS TO BE SILK SCREENED PER ND1002112, .12 HIGH FUTURA DEMIBOLD WHITE PER ND1002122, CENTRALIZE AS SHOWN.

7. IDENTIFY USING DRAWING NUMBER PER ND1002019.

8. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.

9. GASKET DIMENSIONS APPLY AFTER ASSEMBLY.

REVISIONS 25308					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
A		INITIAL RELEASE CHANGE		1-2-66	
B		REVISED PER TDRR-26213		24-FEB-66	B.
C		REVISED PER TDRR 27823		12 APR 66	


SECTION A-A
-A-
.062
.050
.06 R.
.090
.050
.12 R.
.250
.106-.109 THRU ITEM 1 ⊕ .006 DIA
.080-.100 THRU ITEM 2 ⊕ .012 DIA
7 PLACES
①
②
6.034
5.896 BSC
4.407 BSC
2.907 BSC
1.376 BSC
.348 BSC
.107
.108
.12 R.
A
2 x TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
INNER GIMBAL (PITCH)
MIDDLE GIMBAL (YAW)
9.065 BSC
7.646 BSC
.16R 13 PLACES
5.758 BSC
3.870 BSC
1.982 BSC
.562 BSC
1.333
1.000 5 PLACES
9.422 BSC
7.534 BSC
9.642
5.646 BSC
3.758 BSC
1.870 BSC
.12 R.
.140 7 PLACES
.06 3 PLACES
.10 5 PLACES
.06 R. 4 PLACES
1.625
1.290
.532 BSC
2.969 BSC
4.407 BSC
.346 BSC
.092
.093
.31 TO DEPTH SHOWN 5 PLACES
.08 R
.600
.210 2 PLACES
.12 R TYP
.19
.38
.375
.312
.22
.38
.265
.135-.139 THRU
8-32 NC 3B THD THRU
11 PLACES IN ITEM 1 ⊕ .006 DIA
.160-.180 THRU ITEM 2 ⊕ .012 DIA
6 PLACES
"A"
1.625 3 PLACES
.312 4 PLACES
1.280 5 PLACES
.140 5 PLACES
1.313
B
.38
.20
.140
.312
.19
.38
.25
.20
1.906
.978
2.250
.12 R 4 PLACES
VIEW A-A
.0397-.0415 .165 DEEP
DO NOT BREAK THRU
120 UNM THD .130 DEEP
90° CSK TO .050 DIA
8 PLACES
⊕ .006 DIA
.030
.687
1.435 BSC
1.375 BSC
.188
.188
.030
1.000
2.000 BSC
2.062 BSC
CLUSTER "A"
5 PLACES
(SCALE 2:1)
.103
.108
.095
.090
.03 x 45° CHAMFER ALL AROUND
PARTIAL SECTION B-B
TYPICAL 5 PLACES
(SCALE 2:1)

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	6	AR	MIL-A-25457	ADHESIVE, EPOXY (2 PARTS)
SEE NOTE 8	5	AR	1010718	PRIMER, ADHESIVE
	4	AR	1008809-1	PAINT, EPOXY
SEE NOTE 8	3	AR	1010992	PRIMER
SEE NOTE 2B	2	1	1021299-002	GASKET
SEE NOTE 2A	1	1	1021299-001	PANEL

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021302-011	1021304-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.01
3 PLACE DECIMALS ±.005
ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE 21 DEC 65
CHECKED 3 JAN 65
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

PANEL
(INSEPARABLE ASSEMBLY)
CDU FRAME ASSEMBLY

SIZE E
CODE IDENT NO. 80230
1021299
SCALE FULL
SHEET 1 OF 1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

2. MATERIAL:
   A. ALUMINUM ALLOY PER QQ-A-250/11 TEMPER T651.

   B. ZZ-R-765 SILICONE RUBBER, CLASS III GRADE 50, COLOR GREY.

3. MUST BE FREE FROM BURRS AND SHARP EDGES.

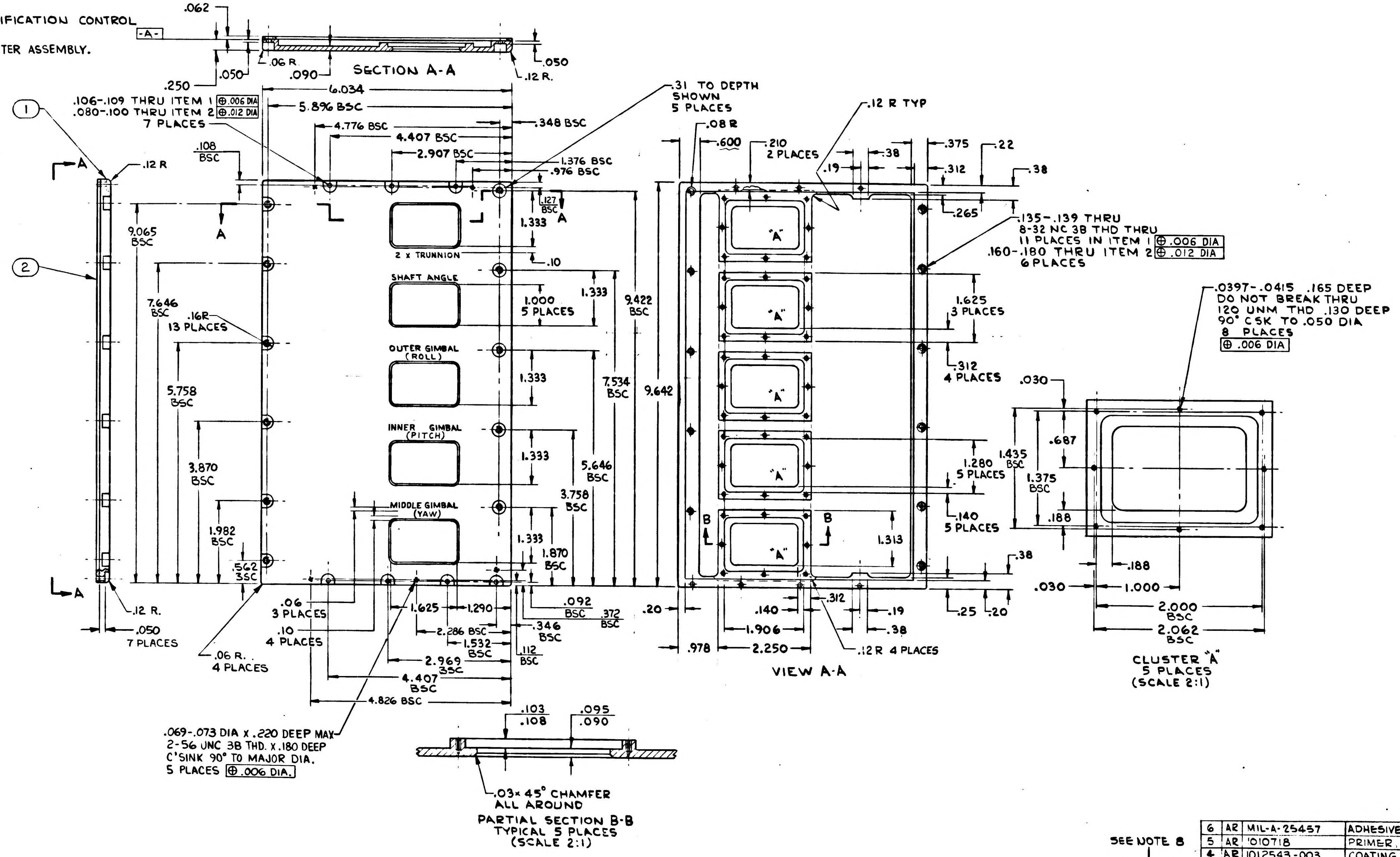
4. ITEM 1 ONLY - TO BE ANODIZED PER MIL-A-8625 TYPE I, CLEAR, ALL OVER. PAINT PER ND 1002291 USING ITEM 3 AND ONE COAT OF ITEM 4, EXCEPT. DO NOT PAINT SURFACE -A- AND RECESSED AREAS BELOW SURFACE -A-.

5. BOND ITEM 2 TO ITEM 1 PER ND1002151 USING ITEMS 5 AND 6.
6. CHARACTERS TO BE SILK SCREENED PER ND1002112, .12 HIGH FUTURA DEMIBOLD WHITE PER ND1002122, CENTRALIZE AS SHOWN.

7. IDENTIFY USING DRAWING NUMBER PER ND1002019.

8. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
9. GASKET DIMENSIONS APPLY AFTER ASSEMBLY.

REVISIONS 25308					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
A		INITIAL RELEASE CHANGE		1-12-66	
B		REVISED PER TDRR-2623		24-FEB-66	B
C		REVISED PER TDRR 27823		12 APR 66	RP
D		REVISED PER TDRR 28218		5 MAY 66	RP



-A-
.062
.050
.090
.06 R
.12 R.
.250
① .106-.109 THRU ITEM 1 ⊕ .006 DIA
.080-.100 THRU ITEM 2 ⊕ .012 DIA
7 PLACES
②
6.034
5.896 BSC
4.776 BSC
4.407 BSC
2.907 BSC
.348 BSC
1.376 BSC
.976 BSC
.108 BSC
A
.127 BSC
9.065 BSC
7.646 BSC
.16R 13 PLACES
5.758 BSC
3.870 BSC
1.982 BSC
.562 BSC
1.333
.10
1.000 5 PLACES
9.422 BSC
7.534 BSC
9.642
5.646 BSC
3.758 BSC
1.870 BSC
2 x TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
INNER GIMBAL (PITCH)
MIDDLE GIMBAL (YAW)
.050 7 PLACES
.06 3 PLACES
.10 4 PLACES
.06 R. 4 PLACES
1.625
1.290
2.286 BSC
1.532 BSC
2.969 BSC
4.407 BSC
4.826 BSC
.092 BSC
.372 BSC
.346 BSC
.112 BSC
.069-.073 DIA x .220 DEEP MAX 2-56 UNC 3B THD. x .180 DEEP C'SINK 90° TO MAJOR DIA. 5 PLACES ⊕ .006 DIA.
.31 TO DEPTH SHOWN 5 PLACES
.08 R
.600
.210 2 PLACES
.12 R TYP
.19
.38
.375
.22
.312
.38
.265
.135-.139 THRU 8-32 NC 3B THD THRU 11 PLACES IN ITEM 1 ⊕ .006 DIA
.160-.180 THRU ITEM 2 ⊕ .012 DIA 6 PLACES
"A"
1.625 3 PLACES
.312 4 PLACES
1.280 5 PLACES
.140 5 PLACES
B
1.313
.38
.20
.140
1.906
2.250
.978
.312
.19
.38
.12 R 4 PLACES
.25
.20
.0397-.0415 .165 DEEP DO NOT BREAK THRU 120 UNM THD .130 DEEP 90° CSK TO .050 DIA 8 PLACES ⊕ .006 DIA
.030
.687
1.435 BSC
1.375 BSC
.188
.188
1.000
2.000 BSC
2.062 BSC
.103
.108
.095
.090
.03 x 45° CHAMFER ALL AROUND

SECTION A-A

VIEW A-A

CLUSTER "A" 5 PLACES (SCALE 2:1)

PARTIAL SECTION B-B TYPICAL 5 PLACES (SCALE 2:1)

	6	AR	MIL-A-25457	ADHESIVE, EPOXY (2 PARTS)
SEE NOTE 8	5	AR	1010718	PRIMER, ADHESIVE
	4	AR	1012543-003	COATING KIT
SEE NOTE 8	3	AR	MIL-P-8585	PRIMER
SEE NOTE 2B	2	1	1021299-002	GASKET
SEE NOTE 2A	1	1	1021299-001	PANEL
	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021302-011	1021304-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.01
3 PLACE DECIMALS ±.005
ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

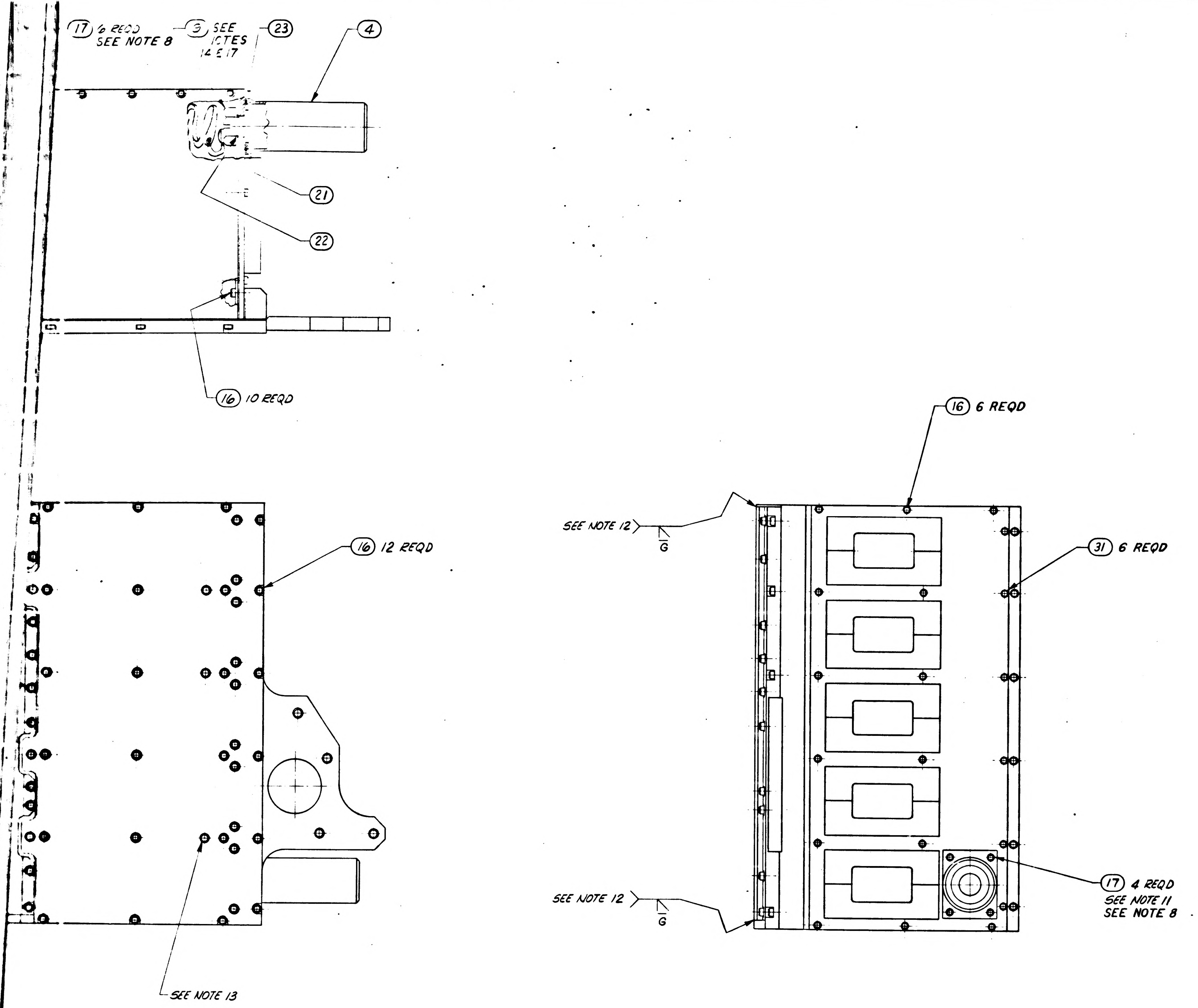
M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE 21 DEC 65
CHECKED 3 JAN 66
APPROVAL
CONTRACT NAS9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

PANEL
(INSEPARABLE ASSEMBLY)
CDU FRAME ASSEMBLY

SIZE E
CODE IDENT NO. 80230
1021299
SCALE FULL
SHEET 1 OF 1

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER TDRR-26653		MAR 66	B



				011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
				AR		33	MIL-A-25457	ADHESIVE
SEE NOTE 5				AR		32	1010718	PRIMER, ADHESIVE
				6		31	NAS 1352 C04-4	SCREW, CAP, SOC HD
SEE NOTE 5				AR		30	1010679	ADHESIVE ACTIVATOR
SEE NOTE 5				AR		29	1010661	RESIN, EPOXY
				AR		28	1008809-1	PAINT, EPOXY
SEE NOTE 5				AR		27	1010992	PRIMER
				AR		26	MIL-S-22473, GRADE C	SEALING COMPOUND
				AR		25	MIL-S-22473, GRADE E	SEALING COMPOUND
				30		24	NAS1352C04LL6	SCREW, CAP SOC. HD.
SEE NOTE 5				1		23	1010858-22	"O" RING, SILICONE
SEE NOTE 5				1		22	1010858-13	"O" RING, SILICONE
				1		21	1021286	RETAINER, "O" RING
				10		20	1021305	SEAL, CONNECTOR
				7		19	NAS1352C02LL6	SCREW, CAP SOC. HD.
				40		18	MS 21269-A112	SCREW, MINIATURE UNM
				16		17	NAS1352C02-4	SCREW, CAP, SOC. HD.
				38		16	NAS1352C04-6	SCREW, CAP SOC. HD.
				5		15	1021289-2	SCREW, CAP SOC HD. CAPTIVE
				6		14	1021289-1	SCREW, CAP SOC. HD. CAPTIVE
				5		13	1021287	GASKET, SCREW
				10		12	1021290	GASKET, WINDOW
				5		11	1021293	CLAMP, WINDOW
				5		10	1021291	WINDOW, FRONT PANEL
				1		9	1017573-011	DESICCATOR PLUG ASSEMBLY
				1		8	1021294	EXTENSION STRIP R.H. SIDE PLATE
				1		7	1021288	CAP, REAR COVER
				1		6	1021298	COVER, TOP
				1		5	1021296	COVER, BOTTOM
				1		4	1021285-011	DESICCATOR ASSY
				1		3	1021300	SIDE PLATE L.H. (INSEP ASSY)
				1		2	1021299	PANEL (INSEP ASSY)
				1		1	1021303-011	FRAME MACHINING ASSY

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021304-021	1021304-021	
1021304-011	1021304-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN John A. Kadowski DATE 23 DEC 65
CHECKED W. [illegible] 6 JAN 65
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE AND PANEL ASSEMBLY,
CDU

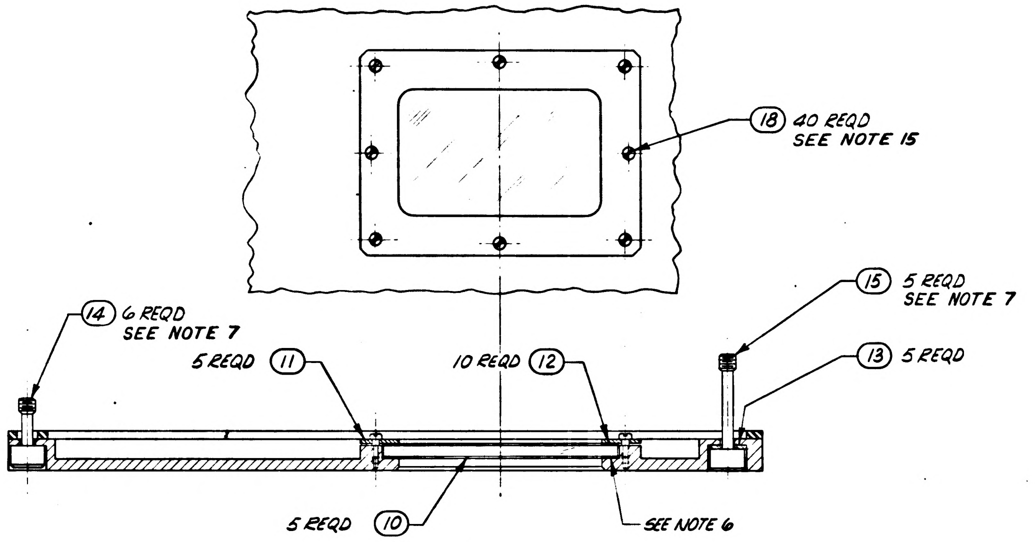
CODE IDENT NO. 80230
SIZE J2
1021302
SCALE
SHEET 1 OF 1

1021302 REV A

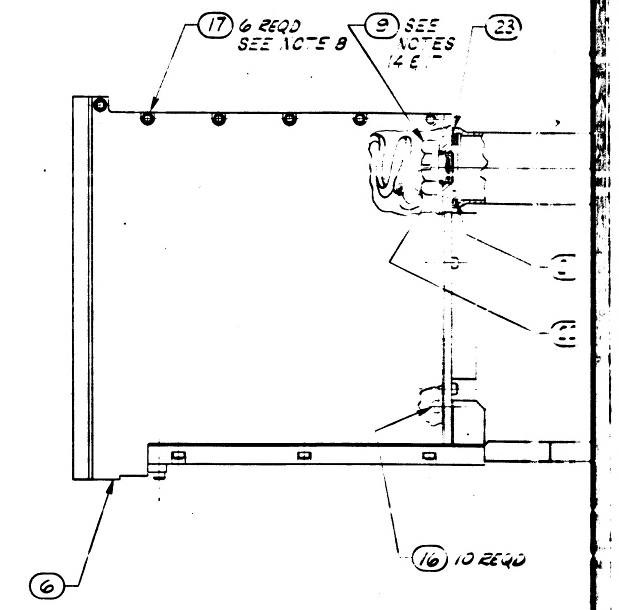
2/1021302

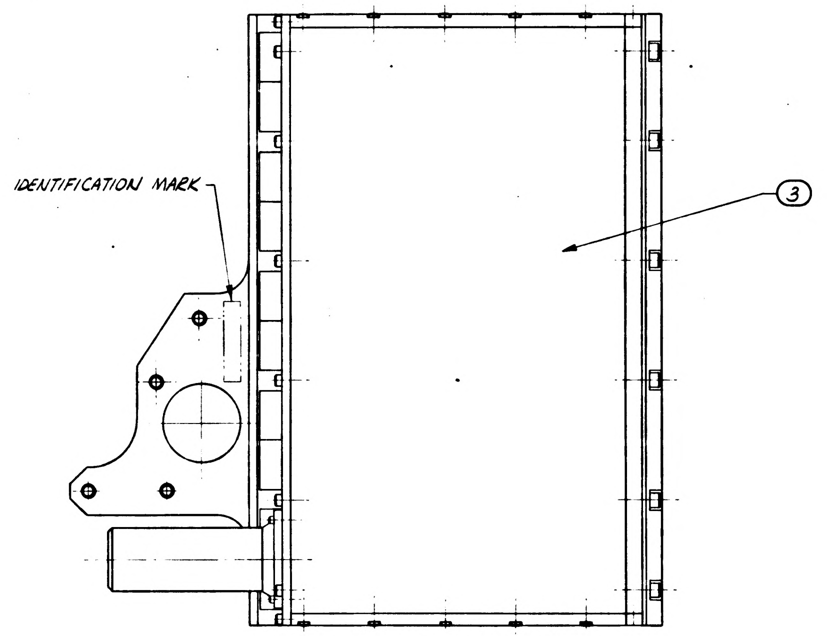
NOTES:

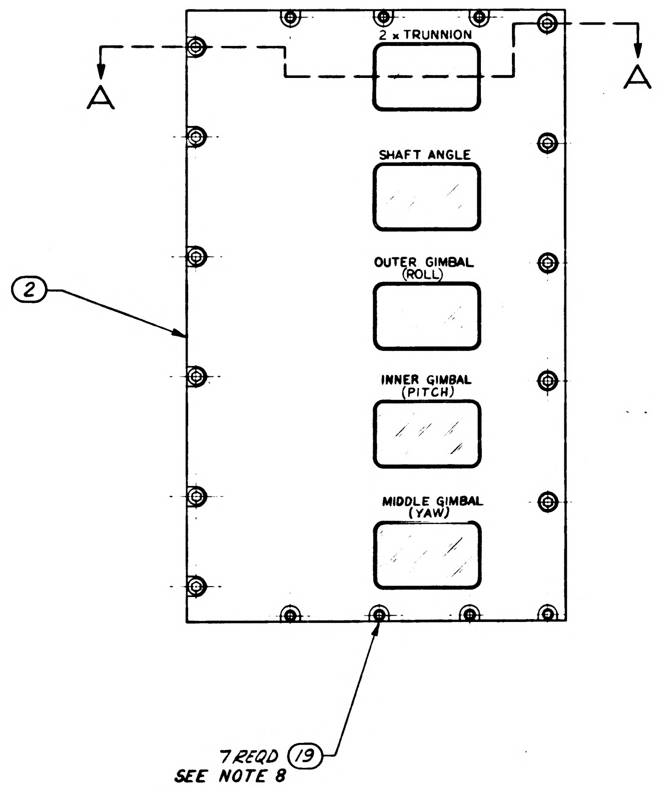
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
3. THE FRAME ASSEMBLY WEIGHT MEASURED TO THE NEAREST .02 POUND MUST BE SUPPLIED WITH THE FINISHED ASSEMBLY.
4. SERIALIZE PER ND 1002023.
5. VENDOR ITEM: SEE SPECIFICATION CONTROL DRAWING.
6. ITEM ⑫ TO BE BONDED TO ITEMS ② & ⑩ PER ND 1002151 USING ITEMS ㉜ AND ㊳.
7. TORQUE ITEMS ⑭ & ⑮ BETWEEN 5 & 6 IN. LB.
8. TORQUE ITEMS ⑰ AND ⑲ BETWEEN 36 AND 41 OZ. IN.
9. JOINTS OF ITEM ③ TO BE BONDED TO ITEMS ⑤, ⑥, AND ① PER ND 1002187, TYPE II USING ITEMS ㉙ & ㉚.
10. EXTERIOR SCREW COUNTER BORES, CUTOUTS AND JOINT CHAMFERS ON ITEMS ①, ⑤, ⑥, ⑦ & ⑧ TO BE FILLED FLUSH $^{+.000}_{-.005}$ USING ITEMS ㉙ & ㉚ PER ND1002187, TYPE II.
11. SCREWS HOLDING ITEM ④ TO BE SECURED PER ND 1002211, USING ITEM ㉕.
2. WELD PER MIL-W-8604 USING FILLER ROD 4043 PER QQ-A-566, FULL JOINT PENETRATION NOT REQUIRED. DIMENSIONAL CHANGES OF JOINT & ITEMS ⑤, ⑥ & ⑧ NOT TO EXCEED .004 AT INSIDE CORNERS. FACE OF WELD TO BE FINISHED FLUSH $^{+.005}_{-.000}$. AFTER WELDING, APPLY A COAT OF CHEMICAL FILM PER MIL-C-5541, CLASS 2 TO THE ANODIZE FREE AREAS OF ITEMS ⑤, ⑥ AND ⑧.
13. LEAK TEST THE 5 CONNECTOR CUTOUTS AND 6 MOUNTING HOLES IN ITEM ① SHALL BE SUITABLY SEALED AND ITEM ⑨ REMOVED. THE CASE SHALL BE PRESSURIZED UNTIL ITEM ④ IS OPEN. AFTER 48 HOURS THE MINIMUM PRESSURE INSIDE THE CASE SHALL BE .4 PSIG.
14. ITEM ⑨ SHALL BE INSTALLED AT ALL TIMES WHILE ITEM ② IS REMOVED OR CONNECTOR MOUNTING HOLES IN ITEM ① ARE OPEN.
15. TORQUE ITEM ⑱ BETWEEN 3.0 AND 4.0 OZ. IN. AND SECURE PER ND1002211, USING ITEM ㉖.
16. PAINT EXTERIOR SURFACES OF ITEMS ③, ⑤, ⑥ & ⑧ PER ND 1002279 USING ITEMS ㉗ & ㉘.
17. TORQUE ITEM ⑨ BETWEEN 35 AND 40 LB IN.
18. ITEMS ⑳ AND ㉔ SHALL BE SUPPLIED AS PART OF THIS ASSEMBLY.

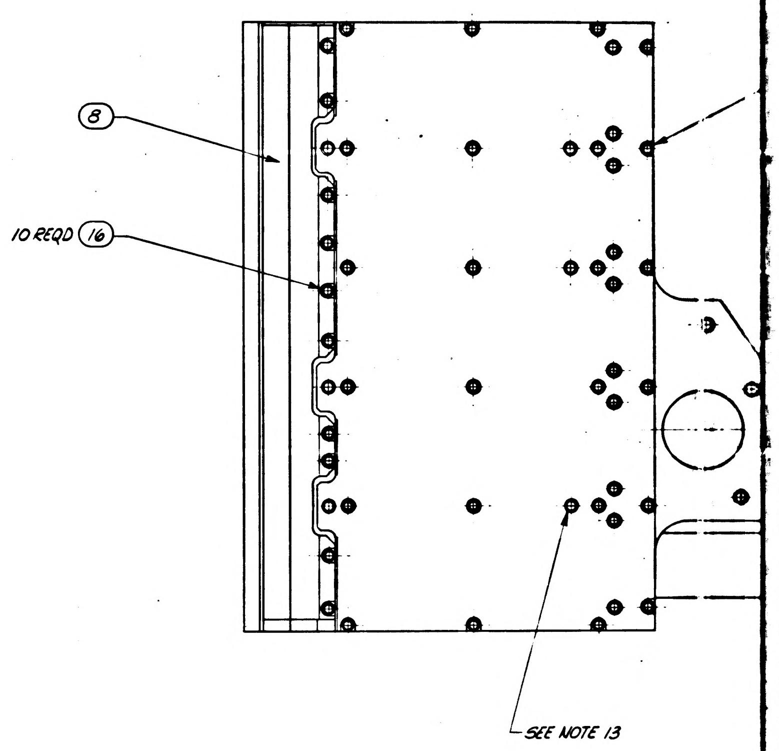

⑱ 40 REQD
SEE NOTE 15
⑭ 6 REQD
SEE NOTE 7
5 REQD ⑪
10 REQD ⑫
⑮ 5 REQD
SEE NOTE 7
⑬ 5 REQD
5 REQD ⑩
SEE NOTE 6

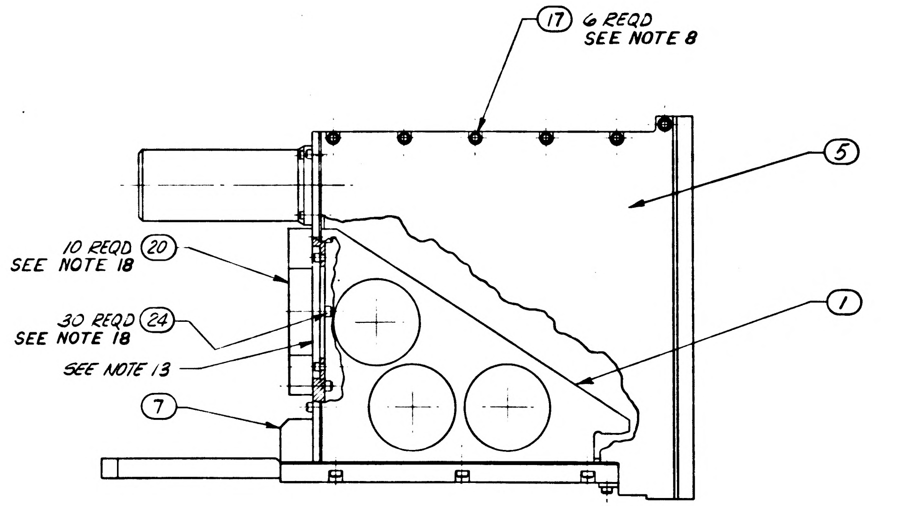
SECTION A-A
SCALE 2:1


⑰ 6 REQD
SEE NOTE 8
⑨ SEE NOTES 14 E
㉓
⑯ 10 REQD
⑥


IDENTIFICATION MARK
③

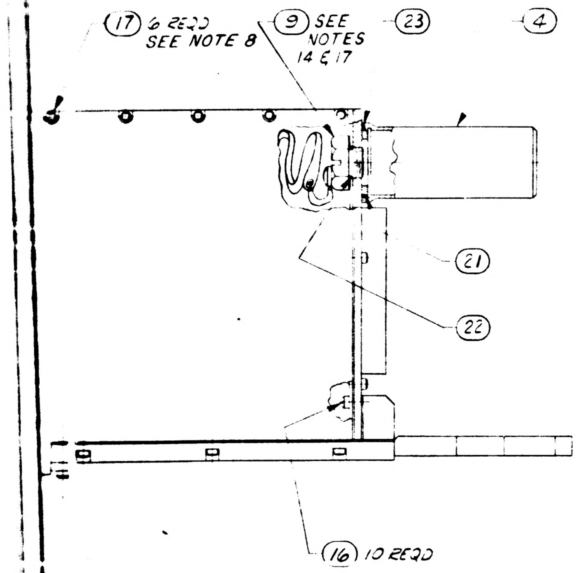

A
A
2 x TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
INNER GIMBAL (PITCH)
MIDDLE GIMBAL (YAW)
②
7 REQD ⑲
SEE NOTE 8

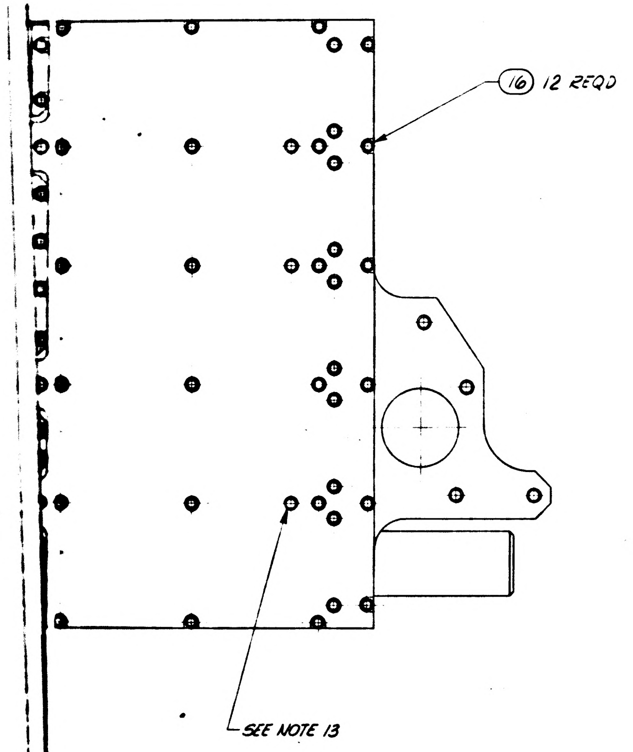

⑧
10 REQD ⑯
SEE NOTE 13

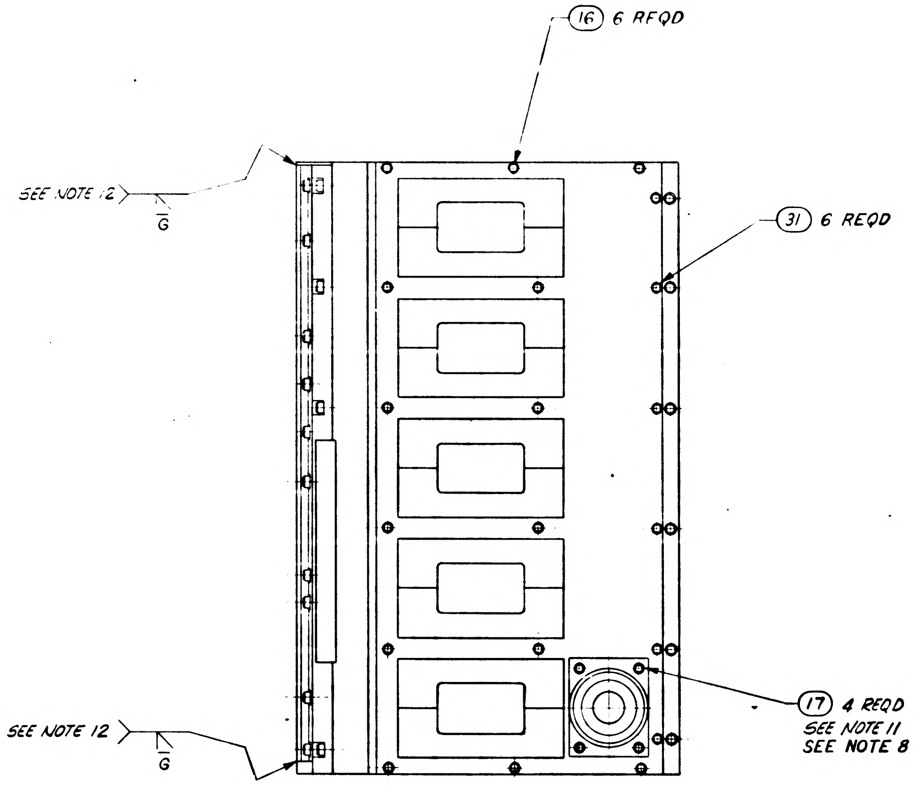

⑰ 6 REQD
SEE NOTE 8
⑤
10 REQD ⑳
SEE NOTE 18
30 REQD ㉔
SEE NOTE 18
SEE NOTE 13
①
⑦

1021302 REV A

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER TDRR-26653		7-MAR-66	B
B		REVISED PER TDRR 28219		4-MAY-66	B CP







				011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
				5		39	1021289-4	SCREW, CAP, SOC HD CAPTIVE
				6		38	1021289-3	SCREW, CAP, SOC HD CAPTIVE
				5		37	NAS 1352C02LL3	SCREW, CAP, SOC HD
				1		36	1017577	RETAINER, SCREW (BOTTOM)
				1		35	1017576	RETAINER, SCREW (TOP)
				7		34	1017575	SCREW, CAP, SOC HD SPECIAL
				AR		33	MIL-A-25457	ADHESIVE
SEE NOTE 5				AR		32	1010718	PRIMER, ADHESIVE
				6		31	NAS 1352 C04-4	SCREW, CAP, SOC HD
SEE NOTE 5				AR		30	1010679	ADHESIVE ACTIVATOR
SEE NOTE 5				AR		29	1010661	RESIN, EPOXY
				AR		28	1008809-1	PAINT EPOXY
SEE NOTE 5				AR		27	1010992	PRIMER
				AR		26	MIL-S-22473, GRADE C	SEALING COMPOUND
				AR		25	MIL-S-22473, GRADE E	SEALING COMPOUND
				30		24	NAS1352C04LL6	SCREW, CAP SOC. HD.
SEE NOTE 5				1		23	1010858-22	"O" RING SILICONE
SEE NOTE 5				1		22	1010858-13	"O" RING, SILICONE
				1		21	1021286	RETAINER, "O" RING
				10		20	1021305	SEAL, CONNECTOR
				~~7~~		19	~~NAS1352C02LL6~~	~~SCREW, CAP SOC. HD.~~
				40		18	MS 21269-A112	SCREW, MINIATURE UNM
				16		17	NAS1352C02-4	SCREW, CAP, SOC. HD.
				38		16	NAS1352C04-6	SCREW, CAP, SOC. HD.
				~~5~~		15	~~1021289-2~~	~~SCREW, CAP SOC. HD. CAPTIVE~~
				~~6~~		14	~~1021289-1~~	~~SCREW, CAP SOC. HD. CAPTIVE~~
				5		13	1021287	GASKET, SCREW
				10		12	1021290	GASKET, WINDOW
				5		11	1021293	CLAMP, WINDOW
				5		10	1021291	WINDOW, FRONT PANEL
				1		9	1017573-011	DESICCATOR PLUG ASSEMBLY
				1		8	1021294	EXTENSION STRIP R.H. SIDE PLATE
				1		7	1021288	CAP, REAR COVER
				1		6	1021298	COVER, TOP
				1		5	1021296	COVER, BOTTOM
				1		4	1021285-011	DESICCATOR ASSY
				1		3	1021300	SIDE PLATE L.H. (INSEP ASSY)
				1		2	1021299	PANEL (INSEP ASSY)
				1		1	1021303-011	FRAME MACHINING ASSY

QUANTITY REQUIRED
LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021304-021	1021304-021	
1021304-011	1021304-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± — ± — ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN John A. [illegible] DATE 23 DEC 65
CHECKED W. [illegible] 6 Jan 65
APPROVAL J. [illegible]
APPROVAL [illegible] 1/11/66
NASA APPROVAL
MIT APPROVAL [illegible] 13 Jan 66

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CASE AND PANEL ASSEMBLY, CDU

CODE IDENT NO. 80230
SIZE J2
1021302
SCALE
SHEET 1 OF 1

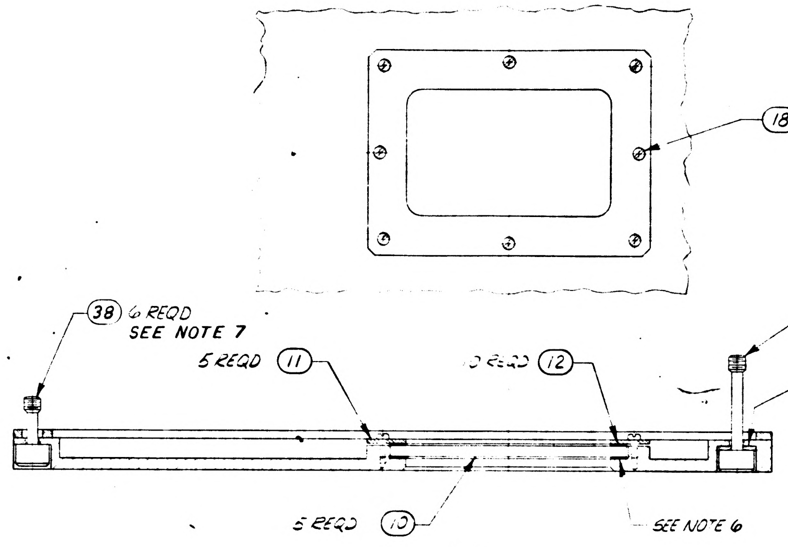
Charleston 6 JAN 65

302 REV B

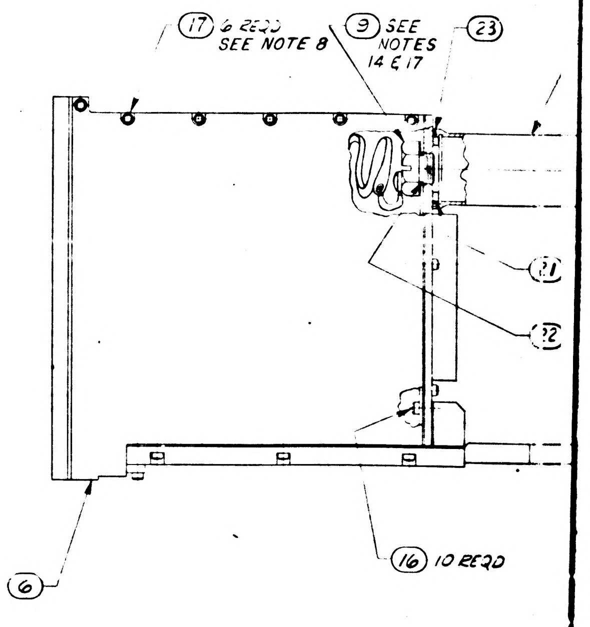
271021302

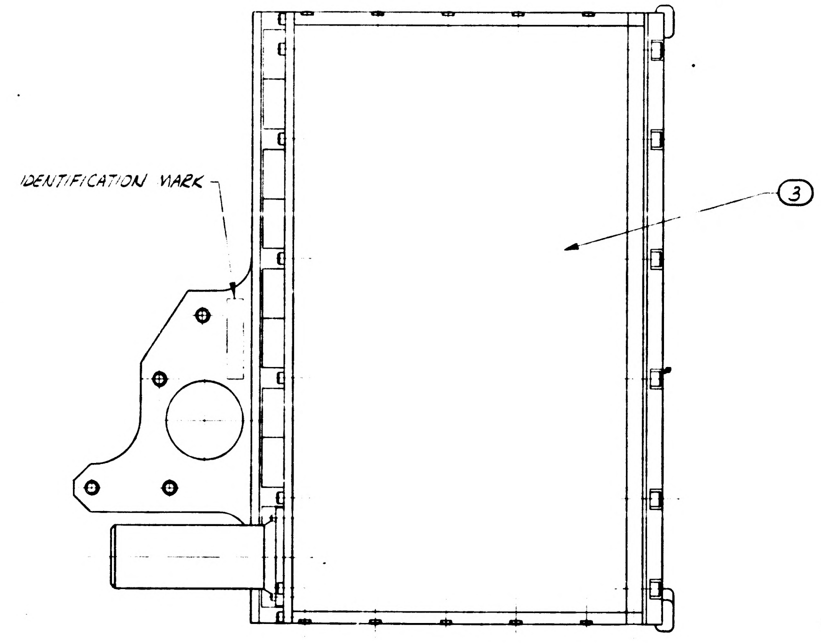
NOTES:

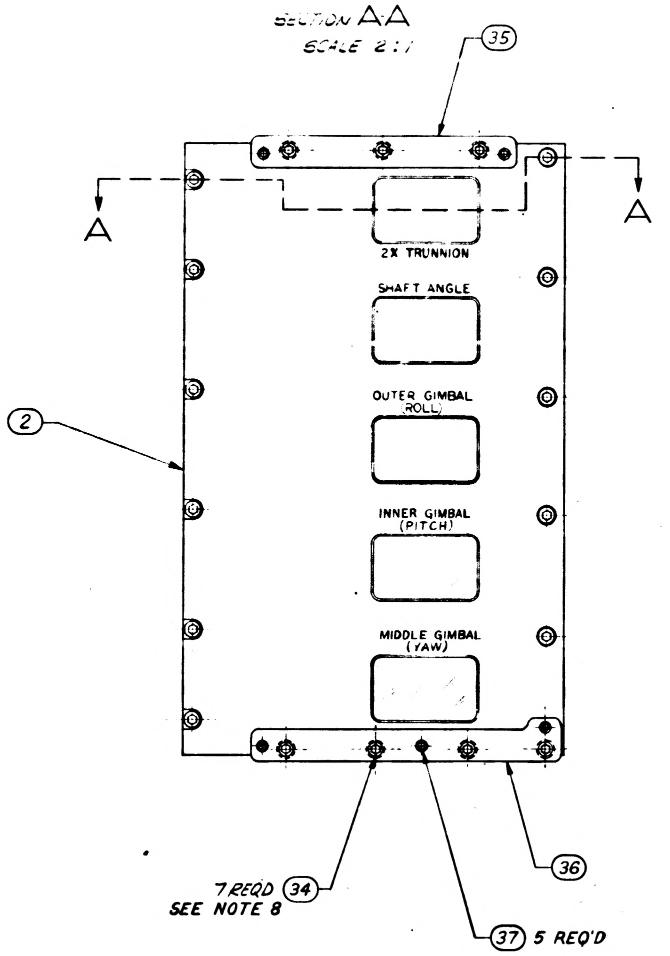
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
3. THE FRAME ASSEMBLY WEIGHT MEASURED TO THE NEAREST .02 POUND MUST BE SUPPLIED WITH THE FINISHED ASSEMBLY.
4. SERIALIZE PER ND1002025.
5. VENDOR ITEM: SEE SPECIFICATION CONTROL DRAWING.
6. ITEM ⑫ TO BE BONDED TO ITEMS ② & ⑩ PER ND1002251 USING ITEMS ㉜ AND ㉝.
7. TORQUE ITEMS ㊳ & ㊴ BETWEEN 5 & 6 IN. LB.
8. TORQUE ITEM ㉞ BETWEEN 28 AND 33 OZ IN.
9. JOINTS OF ITEM ③ TO BE BONDED TO ITEMS ⑤, ⑥ AND ① PER ND1002187, TYPE II USING ITEMS ㉙ & ㉚.
10. EXTERIOR SCREW COUNTER BORES, CUTOUTS AND JOINT CHAMFERS ON ITEMS ◯, ⑤, ⑥, ⑦ & ⑧ TO BE FILLED FLUSH $^{+.000}_{-.005}$ USING ITEMS ㉙ & ㉚ PER ND1002187. TYPE II.
11. SCREWS HOLDING ITEM ④ TO BE SECURED PER ND1002211, USING ITEM ㉕.
12. WELD PER MIL-W-8604 USING FILLER ROD 4043 PER QQ-A-566, FULL JOINT PENETRATION NOT REQUIRED. DIMENSIONAL CHANGES OF JOINT & ITEMS ⑤, ⑥ & ⑧ NOT TO EXCEED .004 AT INSIDE CORNERS. FACE OF WELD TO BE FINISHED FLUSH ±.005. AFTER WELDING, APPLY A COAT OF CHEMICAL FILM PER MIL-C-5541, CLASS 2 TO THE ANODIZE FREE AREAS OF ITEMS ⑤, ⑥ AND ⑧.
13. LEAK TEST
THE 5 CONNECTOR CUTOUTS AND 6 MOUNTING HOLES OF ITEM ① SHALL BE SUITABLY SEALED AND ITEM ⑨ REMOVED. THE CASE SHALL BE PRESSURIZED UNTIL ITEM ④ IS OPEN. AFTER 48 HOURS THE MINIMUM PRESSURE INSIDE THE CASE SHALL BE .4 PSIG.
14. ITEM ⑨ SHALL BE INSTALLED AT ALL TIMES WHILE ITEM ② IS REMOVED OR CONNECTOR MOUNTING HOLES IN ITEM ◯ ARE OPEN.
15. TORQUE ITEM ⑱ BETWEEN 3.0 AND 4.0 OZ. IN. AND SECURE PER ND1002211, USING ITEM ㉖.
16. PAINT EXTERIOR SURFACES OF ITEMS ③, ⑤, ⑥ & ⑧ PER ND1002279 USING ITEMS ㉗ & ㉘.
17. TORQUE ITEM ⑨ BETWEEN 35 AND 40 LB IN.
18. ITEMS ⑳ AND ㉔ SHALL BE SUPPLIED AS PART OF THIS ASSEMBLY.

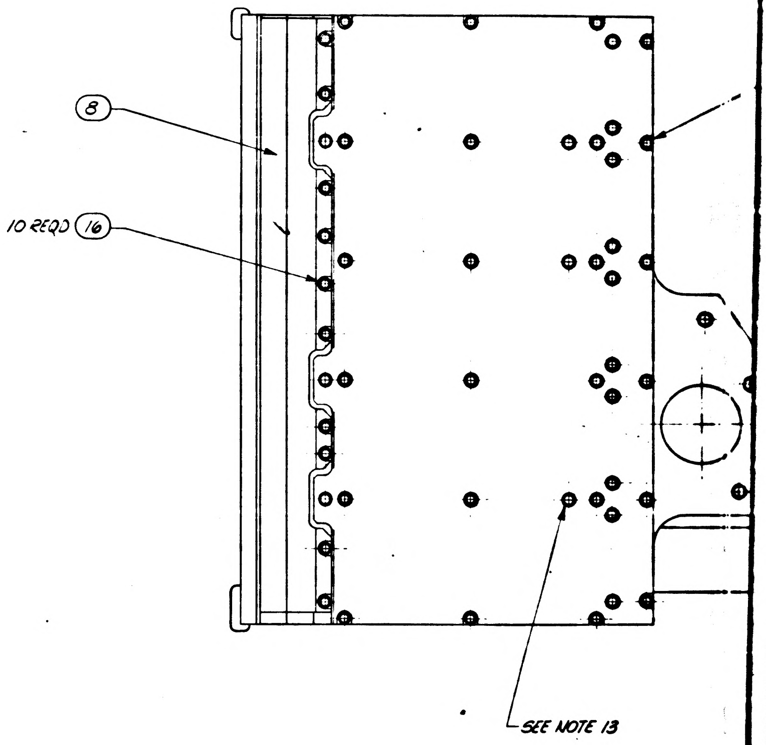

⑱ 40 REQD
SEE NOTE 15
㊳ 6 REQD
SEE NOTE 7
㊴ 5 REQD
SEE NOTE 7
5 REQD ⑪
10 REQD ⑫
⑬ 5 REQD
5 REQD ⑩
SEE NOTE 6

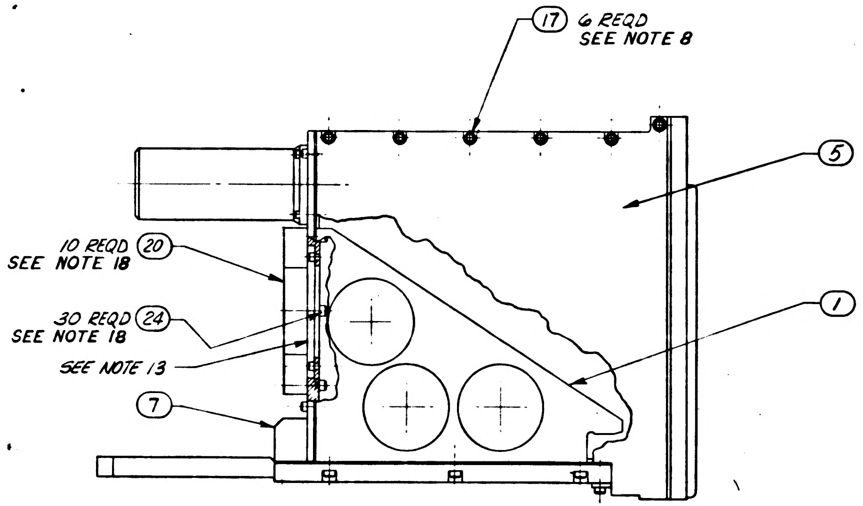
SECTION A-A
SCALE 2:1


⑰ 6 REQD
SEE NOTE 8
⑨ SEE NOTES 14 & 17
㉓
㉛
㉜
⑥
⑯ 10 REQD


IDENTIFICATION MARK
③

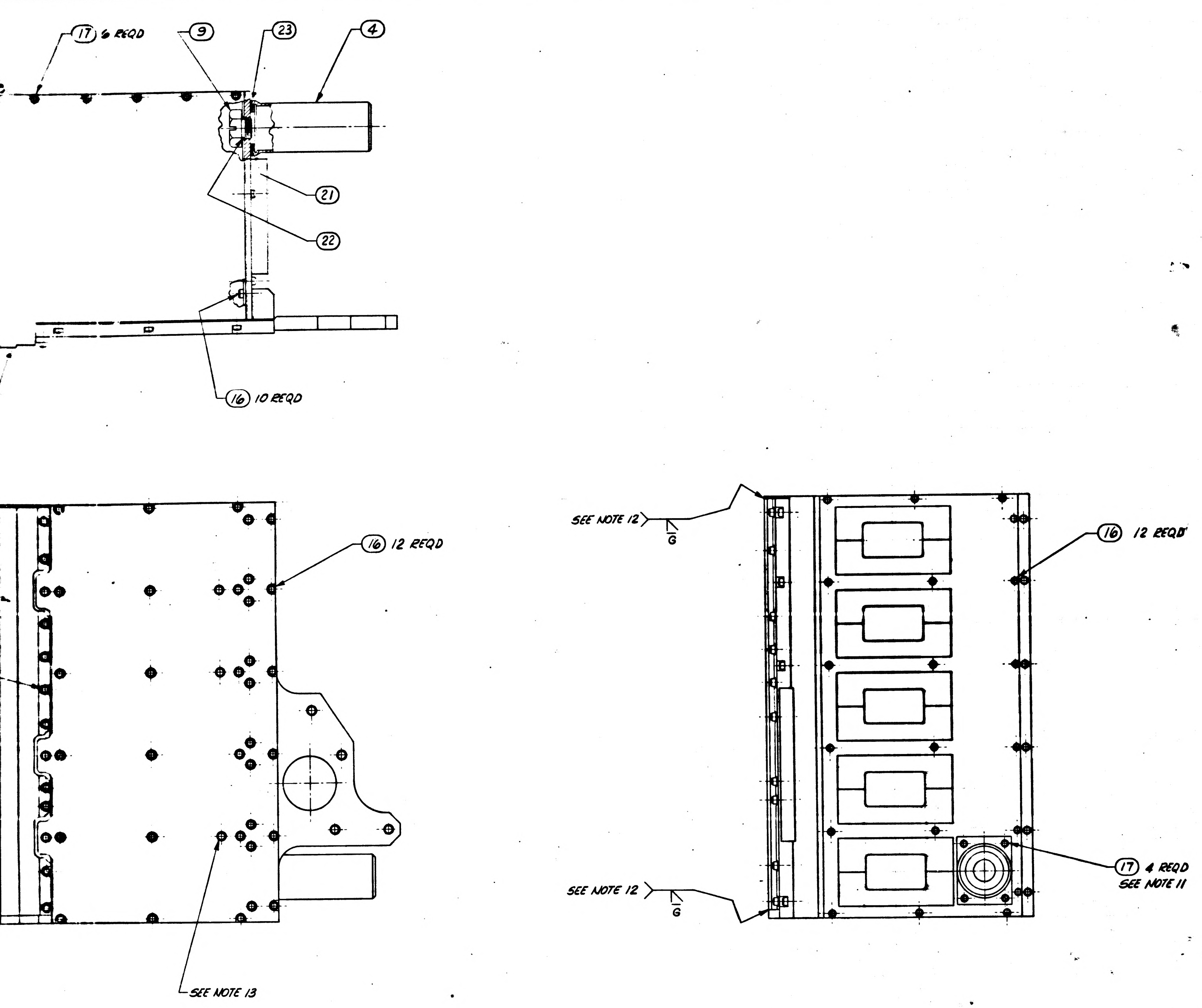

㉟
A
A
2X TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
INNER GIMBAL (PITCH)
MIDDLE GIMBAL (YAW)
②
㊱
7 REQD ㉞
SEE NOTE 8
㊲ 5 REQ'D


⑧
10 REQD ⑯
SEE NOTE 13


⑰ 6 REQD
SEE NOTE 8
⑤
10 REQD ⑳
SEE NOTE 18
30 REQD ㉔
SEE NOTE 18
SEE NOTE 13
①
⑦

1021302 REV B

17/1021302



REVISIONS 25305

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD

	QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
				ON				
SEE NOTE 5				AR		30	1010679	ADHESIVE ACTIVATOR
SEE NOTE 5				AR		29	1010661	RESIN, EPOXY
				AR		28	1008809-1	PAINT, EPOXY
SEE NOTE 5				AR		27	1010992	PRIMER
				AR		26	MIL-S-22473, GRADE C	SEALING COMPOUND
				AR		25	MIL-S-22473, GRADE E	SEALING COMPOUND
				30		24	NAS1352C04LL6	SCREW, CAP SOC. HD.
SEE NOTE 5				1		23	1010858-22	"O" RING, SILICONE
SEE NOTE 5				1		22	1010858-13	"O" RING, SILICONE
				1		21	1021286	RETAINER, "O" RING
				10		20	1021305	SEAL, CONNECTOR
				7		19	NAS1352C02LL6	SCREW, CAP SOC. HD.
				40		18	MS 21269-A112	SCREW, MINIATURE UNM
				16		17	NAS1352C02-4	SCREW, CAP, SOC. HD.
				44		16	NAS1352C04-6	SCREW, CAP, SOC. HD.
				5		15	1021289-2	SCREW, CAP, SOC. HD. CAPTIVE
				6		14	1021289-1	SCREW, CAP, SOC. HD. CAPTIVE
				5		13	1021287	GASKET, SCREW
				10		12	1021290	GASKET, WINDOW
				5		11	1021293	CLAMP, WINDOW
				5		10	1021291	WINDOW, FRONT PANEL
				1		9	1021295	PLUG, DESICCATOR
				1		8	1021294	EXTENSION STRIP R.H. SIDE PLATE
				1		7	1021288	CAP, REAR COVER
				1		6	1021298	COVER, TOP
				1		5	1021296	COVER, BOTTOM
				1		4	1021285-011	DESICCATOR ASSY
				1		3	1021300	SIDE PLATE L.H. (INSEP ASSY)
				1		2	1021299	PANEL (INSEP ASSY)
				1		1	1021303-011	FRAME, MACHINING ASSY

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
1021304-011	1021304-011	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN John A. Kadow 29 DEC 65
CHECKED W. Tuckle 6 Jan '65
APPROVAL J. B. 6 JAN 66
APPROVAL 1-11-66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 13 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE AND PANEL ASSEMBLY, CDU

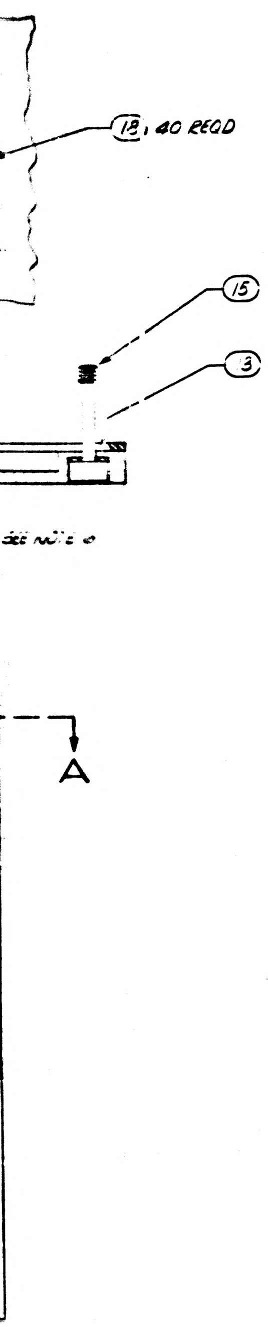
CODE IDENT NO. 80230
SIZE J2
1021302
SCALE
SHEET 1 OF 1

6 JAN 65

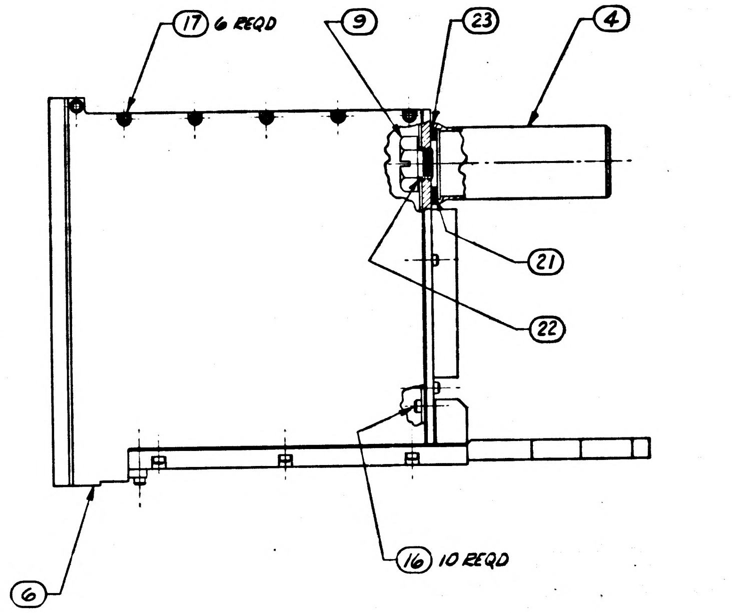
1021302

34

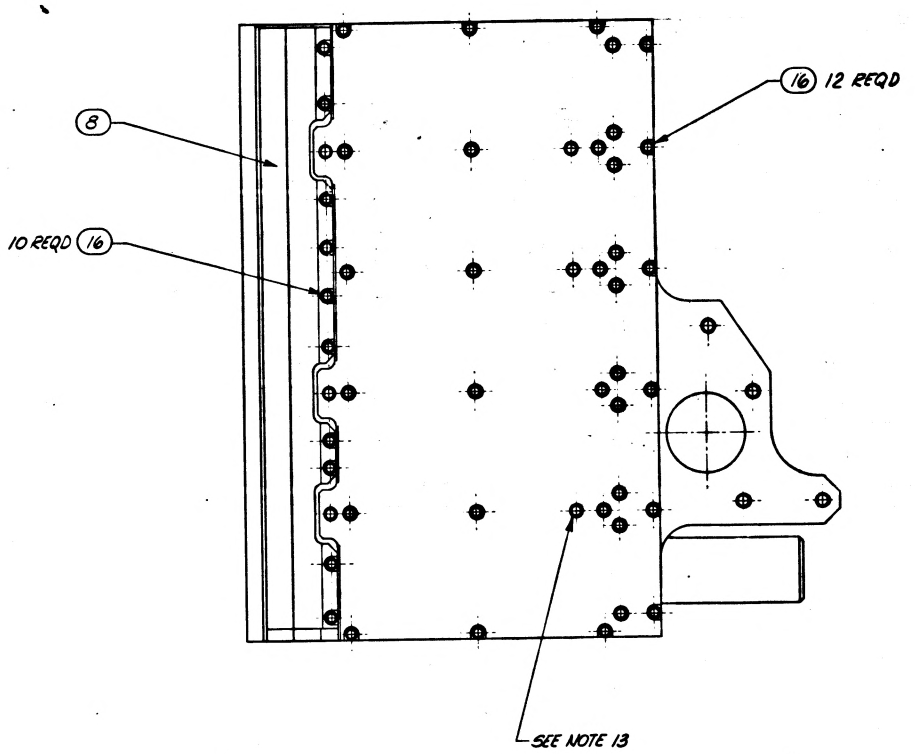
MASTER



18 40 REQD
15 5 REQD
3 5 REQD
SEE NOTE
A



17 6 REQD
9
23
4
21
22
16 10 REQD
6



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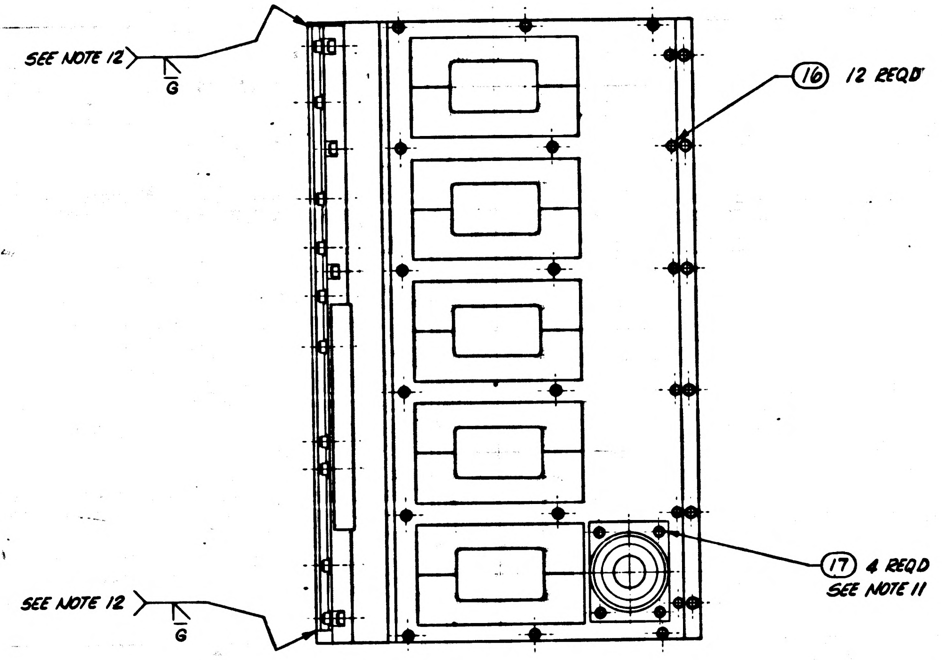
16 12 REQD
10 REQD 16
SEE NOTE 13



SEE NOTE 12
G
16 12 REQD
17 4 REQD
SEE NOTE 11
SEE NOTE 12
G

				011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENC… OR DES…
SEE NOTE 5				AR		30	1010675	ADHES
SEE NOTE 5				AR		29	101066[illegible]	RESIN
				AR		28	1008809-1	PAINT
SEE NOTE 5				AR		27	1010992	PRIM
				AR		26	MIL-S-22473 GRADE C	SEALI
				AR		25	MIL-S-22473 GRADE E	SEALI
				30		24	NAS1352C04LL6	SCREW
SEE NOTE 5				1		23	1010856-22	"O" R
SEE NOTE 5				1		22	1010856-13	"O" R
				1		21	1021286	RETAI
				10		20	1021303	SEAL
				7		19	NAS1352CC2LL6	SCREW
				40		18	MS 21269-A112	SCREW
				16		17	[illegible]-4	SCREW
				44		[illegible]	[illegible]-6	SCREW
				5		[illegible]	[illegible]89-2	SCREW
				5		[illegible]	[illegible]89-1	SCREW
				5		13	[illegible]7	GASKE
				5		[illegible]	[illegible]	GASKE
				5		11	[illegible]293	CLAMP
				5		10	[illegible]291	WINDO
				1		9	[illegible]295	PLUG
				1		8	[illegible]	EYEL
				1		[illegible]	[illegible]9	CAP
				1		6	[illegible]	COVE
				1		5	[illegible]	COVE
				1		4	[illegible]-011	DES
				1		3	[illegible]	SIDE
				1		2	[illegible]9	PAN
				1		[illegible]	[illegible]9-011	FRA

QUANTITY REQUIRED

LIST OF PART

1021304-011	1021304-011	
NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ± —
ANGLES ± —

DO NOT SCALE THIS DRAWING

MATERIAL —

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN 28 DEC 64
CHECKED
APPROVAL
APPROVAL 11-65

NASA APPROVAL

MIT APPROVAL

CASE

CODE IDENT NO
80230

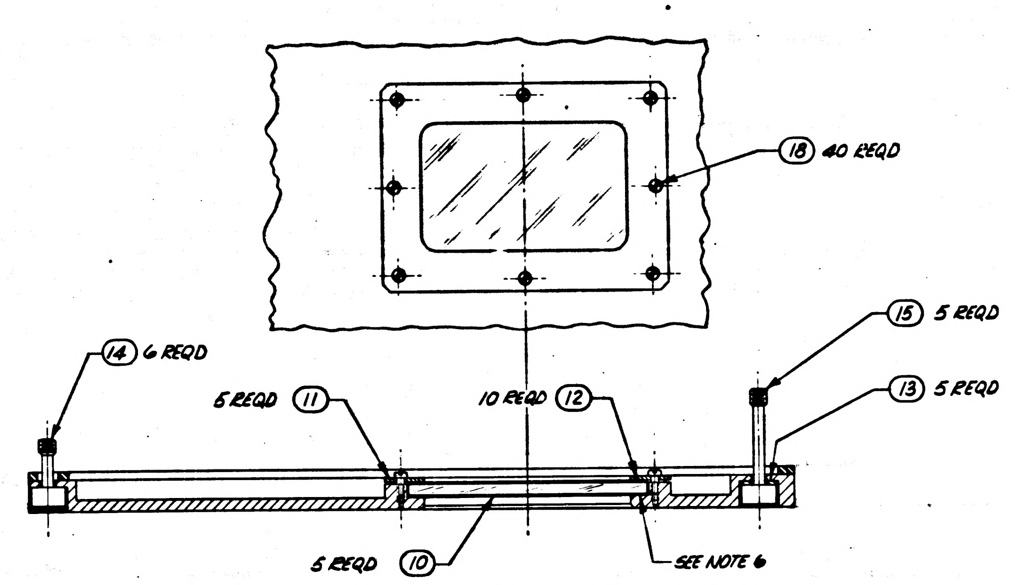
SCALE

1021302

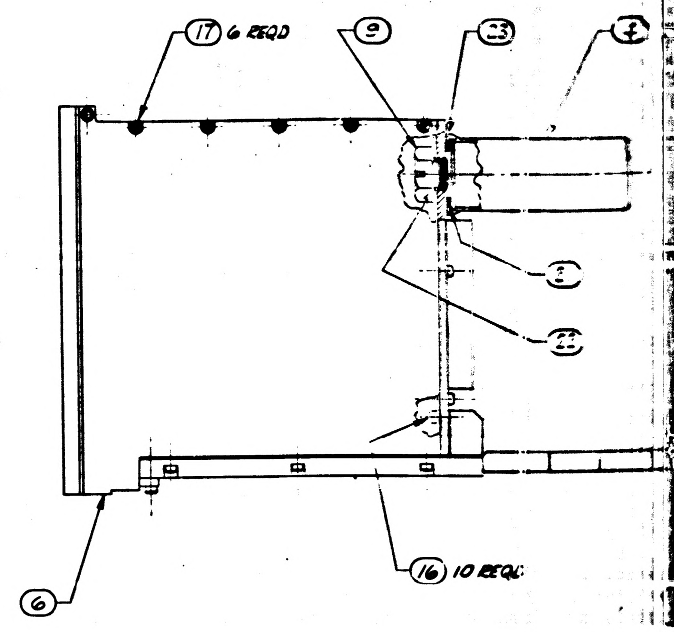
E-2

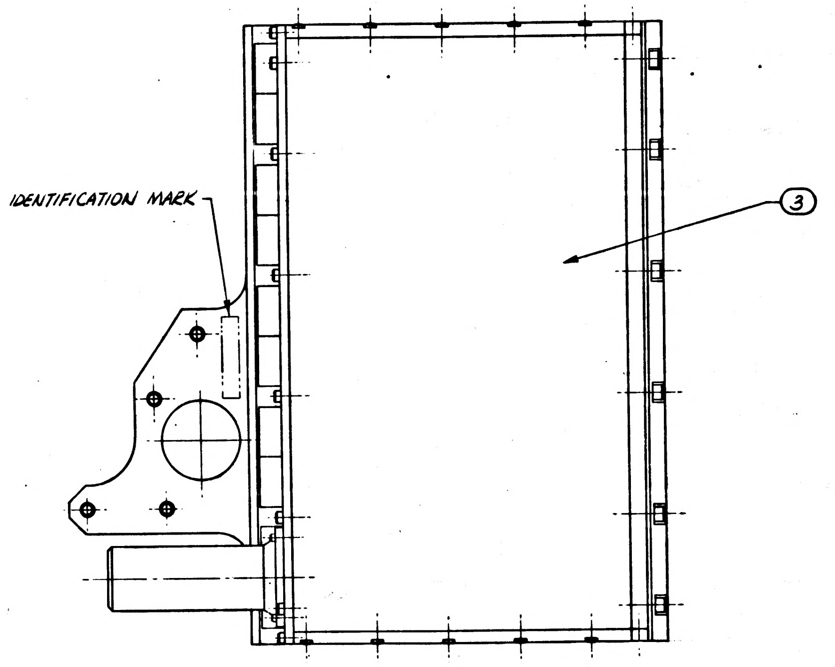
NOTES:

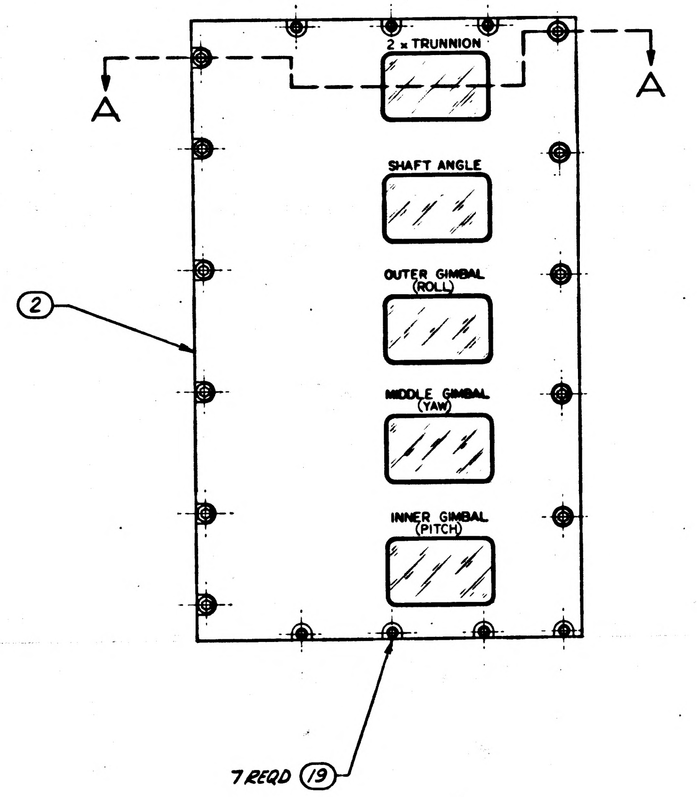
1. INTERPRET DRAWINGS IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NUMBER PER ND1002019.
3. THE FRAME ASSEMBLY WEIGHT MEASURED TO THE NEAREST .02 POUND MUST BE SUPPLIED WITH THE FINISHED ASSEMBLY.
4. SERIALIZE PER ND1002023.
5. VENDOR ITEM: SEE SPECIFICATION CONTROL DRAWING.
6. ITEM ⑫ TO BE BONDED TO ITEMS ② & ⑩ PER ND1002151.
7. TORQUE ITEMS ⑭ & ⑮ BETWEEN 5 & 6 IN. LB.
8. TORQUE ITEM ㉘ BETWEEN 36 & 41 OZ IN.
9. JOINTS OF ITEM ③ TO BE BONDED TO ITEMS ⑤, ⑥, AND ① PER ND1002187, TYPE II.
10. EXTERIOR SCREW COUNTER BORES, CUTOUTS AND JOINT CHAMFERS ON ITEMS ①, ⑤, ⑥, ⑦ & ⑧ TO BE FILLED FLUSH $^{+.000}_{-.005}$ USING ITEMS ㉙ & ㉚.
11. SCREWS HOLDING ITEM ④ TO BE SECURED PER ND1002211, USING ITEM ㉕.
12. WELD PER MIL-W-8604 USING FILLER ROD 5356 PER QQ-A-566, FULL JOINT PENETRATION NOT REQUIRED. DIMENSIONAL CHANGES OF JOINT & ITEMS ⑤, ⑥ & ⑧ NOT TO EXCEED .004 AT INSIDE CORNERS. FACE OF WELD TO BE FINISHED FLUSH $^{+.005}_{-.000}$.
13. LEAK TEST
    THE 5 CONNECTOR CUTOUTS AND 6 MOUNTING HOLES IN ITEM ① SHALL BE SUITABLY SEALED AND ITEM ⑨ REMOVED. THE CASE SHALL BE PRESSURIZED UNTIL ITEM ④ IS OPEN. AFTER 48 HOURS THE MINIMUM PRESSURE INSIDE THE CASE SHALL BE .4 PSIG.
14. ITEM ⑨ SHALL BE INSTALLED AT ALL TIMES WHILE ITEM ② IS REMOVED OR CONNECTOR MOUNTING HOLES IN ITEM ① ARE OPEN.
15. ITEM ⑱ TO BE SECURED PER ND1002211, USING ITEM ㉖.
16. PAINT EXTERIOR SURFACES OF ITEMS ③, ⑤, ⑥ & ⑧ PER ND1002279 USING ITEMS ㉗ & ㉘.

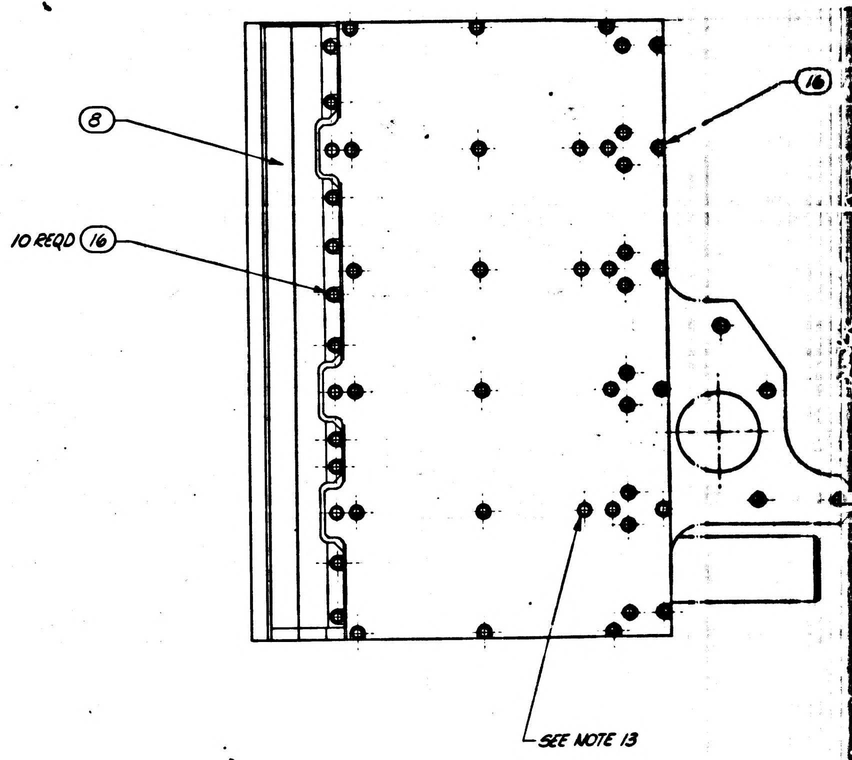

⑱ 40 REQD
⑭ 6 REQD
5 REQD ⑪
10 REQD ⑫
⑮ 5 REQD
⑬ 5 REQD
5 REQD ⑩
SEE NOTE 6

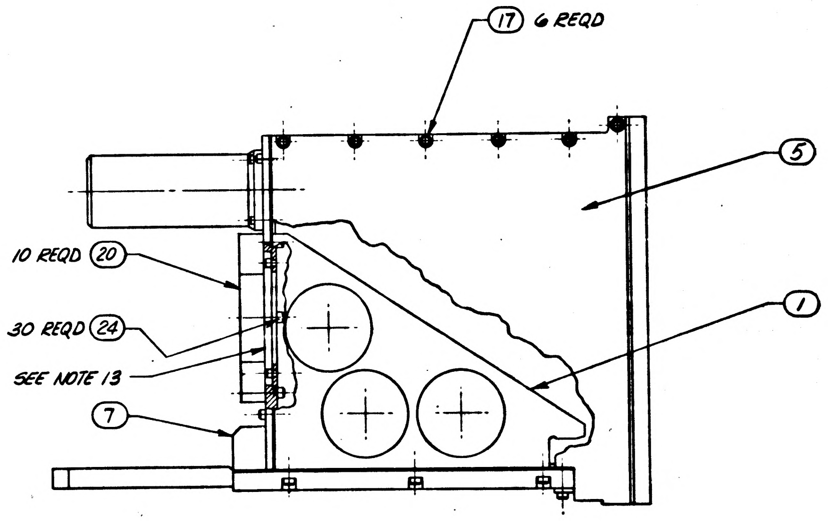
SECTION A-A
SCALE 2:1


⑰ 6 REQD
⑨
㉓
⑯ 10 REQ
⑥


IDENTIFICATION MARK
③


A
A
2 x TRUNNION
SHAFT ANGLE
OUTER GIMBAL (ROLL)
MIDDLE GIMBAL (YAW)
INNER GIMBAL (PITCH)
②
7 REQD ⑲


⑯
⑧
10 REQD ⑯
SEE NOTE 13


⑰ 6 REQD
⑤
10 REQD ⑳
30 REQD ㉔
SEE NOTE 13
⑦
①

1021304

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. THIS IS AN INCOMPLETE DRAWING.

REVISIONS 25308

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		REVISED PER TDRR 26177		15 FEB 66	J.H.P.

1021304 | A

051	041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			5	5		7	AN1351C-3-6	SCREW, SOCKET HEAD CAP
			1	1		6	1010705-12	CLAMP
			1	1		5	1010705-10	CLAMP
			1	1		4	1023027	BRACKET
			—	2		3	1015500-051	CDU ASSEMBLY
			5	3		2	1015500-041	CDU ASSEMBLY
			1	1		1	1021302-011	CASE AND PANEL ASSEMBLY, CDU

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± ___ DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO CONTRACT
DRAWN John A Kondonski DATE 23 DEC 65
CHECKED W. Diehl 6 JAN 66
APPROVAL J. Petrangi 5 JAN 66
APPROVAL N. J. Sirocco 1-11-66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 13 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

COUPLING DISPLAY
ASSEMBLY

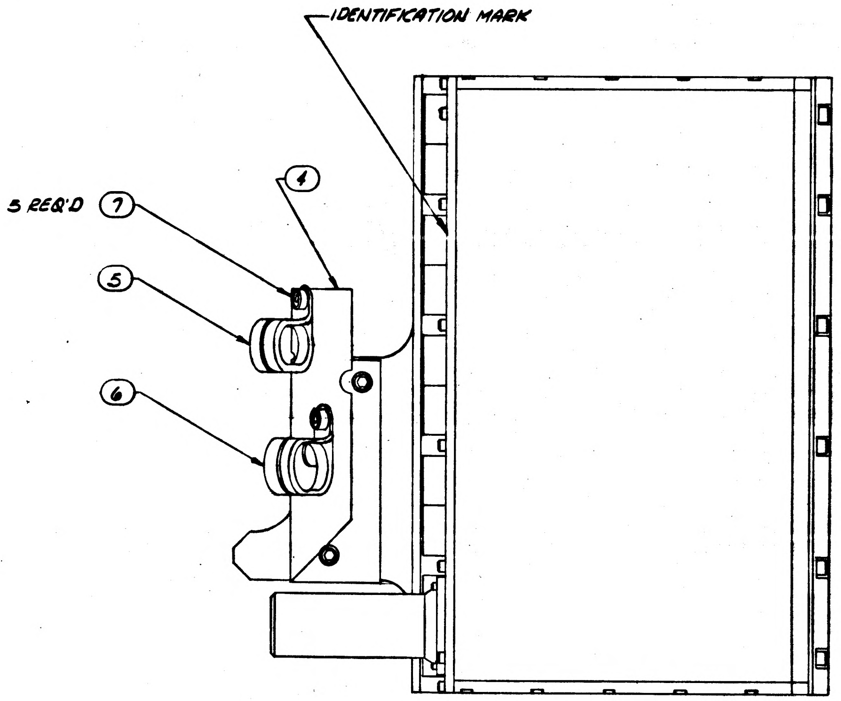
CODE IDENT NO.	SIZE	
80230	C	1021304
SCALE —		SHEET 1 OF 1

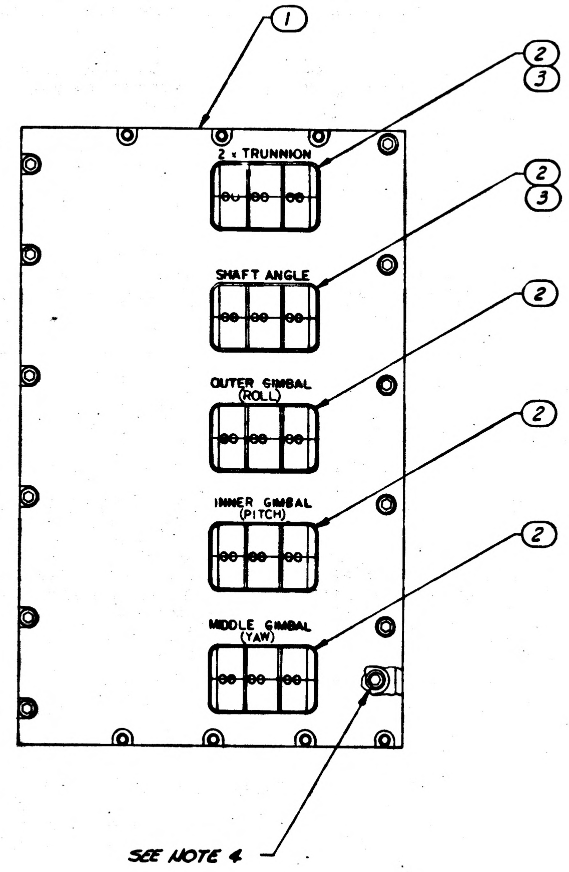
MIL 1078C-P

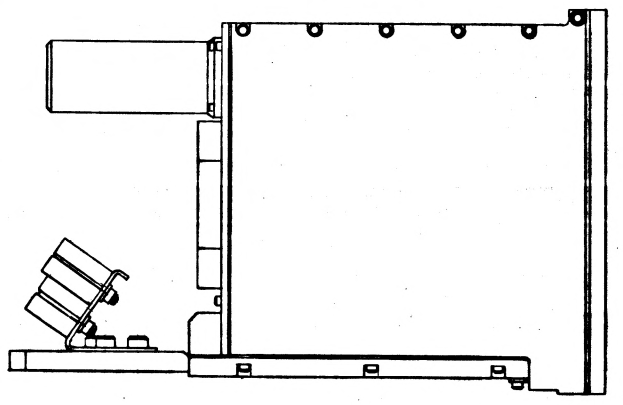
NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. VENDOR ITEM: SEE SPECIFICATION CONTROL DRAWING.
3. IDENTIFY USING DRAWING NUMBER PREFIXED BY "ASSY" WITH APPLICABLE DASH NUMBER PER ND1002019.
4. TORQUE SCREWS BETWEEN 37 TO 40 IN. LBS (5 PLACES)

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	B	REPLACES REV A WITH CHANGE PER TDRR 26942		1 MAR. 66	







SEE NOTE 2
SEE NOTE 2

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
		021	011				
		5	5		7	NAS1351C3-6	(1897033-038) SCREW, SOC HD
		1	1		6	1010705-12	CLAMP
		1	1		5	1010705-10	CLAMP
		1	1		4	1023027	BRACKET (LSEP ASSY)
		–	2		3	1015500-051	CDU ASSEMBLY
		5	3		2	1015500-041	CDU ASSEMBLY
		1	1		1	1021302-011	CASE & PANEL ASSY, CDU

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE 27 JAN 66
CHECKED 1 FEB 66
APPROVAL FEB 66
CONTRACT NAS9-499
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

COUPLING DISPLAY ASSEMBLY

SIZE E
CODE IDENT NO. 80230
1021304
SCALE 1:1
SHEET 1 OF 1

REVISIONS 25308					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. THIS IS AN INCOMPLETE DRAWING.

051	041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
				5			AN1351C-3-6	SCREW, SOCKET HEAD CAP
				1			1010705-12	CLAMP
				1			1010705-10	CLAMP
				1			1023027	BRACKET
				2			1015500-051	CDU ASSEMBLY
				3			1015500-041	CDU ASSEMBLY
				1			1021302	CASE AND PANEL ASSEMBLY, CDU

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON	APPLICABLE DASH NO.
APPLICATION		

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + — − ; DECIMALS + — − ; ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL ______
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN John Koudmah DATE 23 DEC 65
CHECKED W. Diehl 6 JAN 66
APPROVAL J. Petrangi 5 JAN 66
APPROVAL N. J. Sirico 1-11-66
A. C. METZGER
NASA APPROVAL
MIT APPROVAL 13 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

COUPLING DISPLAY ASSEMBLY

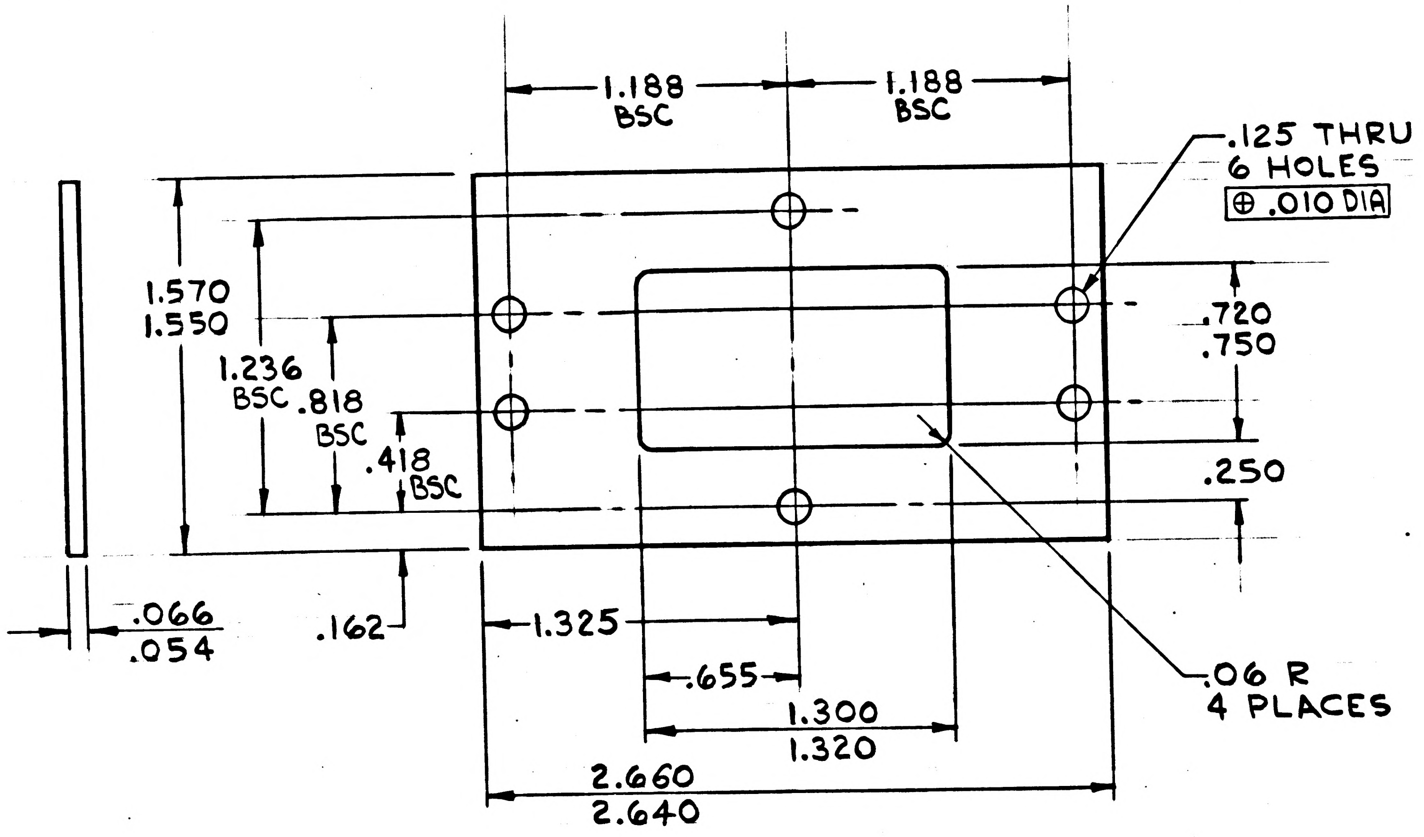
CODE IDENT NO. 80230
SIZE C
1021304
SCALE —
SHEET 1 OF 1

MIL 1078C—P

REV LTR 1021307

REVISIONS				25308	
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE REV.		1-11-66	

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ZZ-R-765 SILICONE RUBBER CLASS III, GRADE 50, COLOR GRAY NO. 36231 PER FED-STD-595.
3. IDENTIFY USING DRAWING NUMBER PER ND1002019.


1.188 BSC
1.188 BSC
.125 THRU
6 HOLES
⊕ .010 DIA
1.570
1.550
1.236 BSC
.818 BSC
.418 BSC
.720
.750
.250
.066
.054
.162
1.325
.655
1.300
1.320
2.660
2.640
.06 R
4 PLACES

1015056	1015056
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± -
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN R.W. Hassil DATE 29 DEC 65
CHECKED Wm. Kaustac 29 DEC 65
APPROVAL J. Petianny 5 JAN 66
CONTRACT NAS9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL H.J. Sirocco
Charleston 6 JAN 65

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

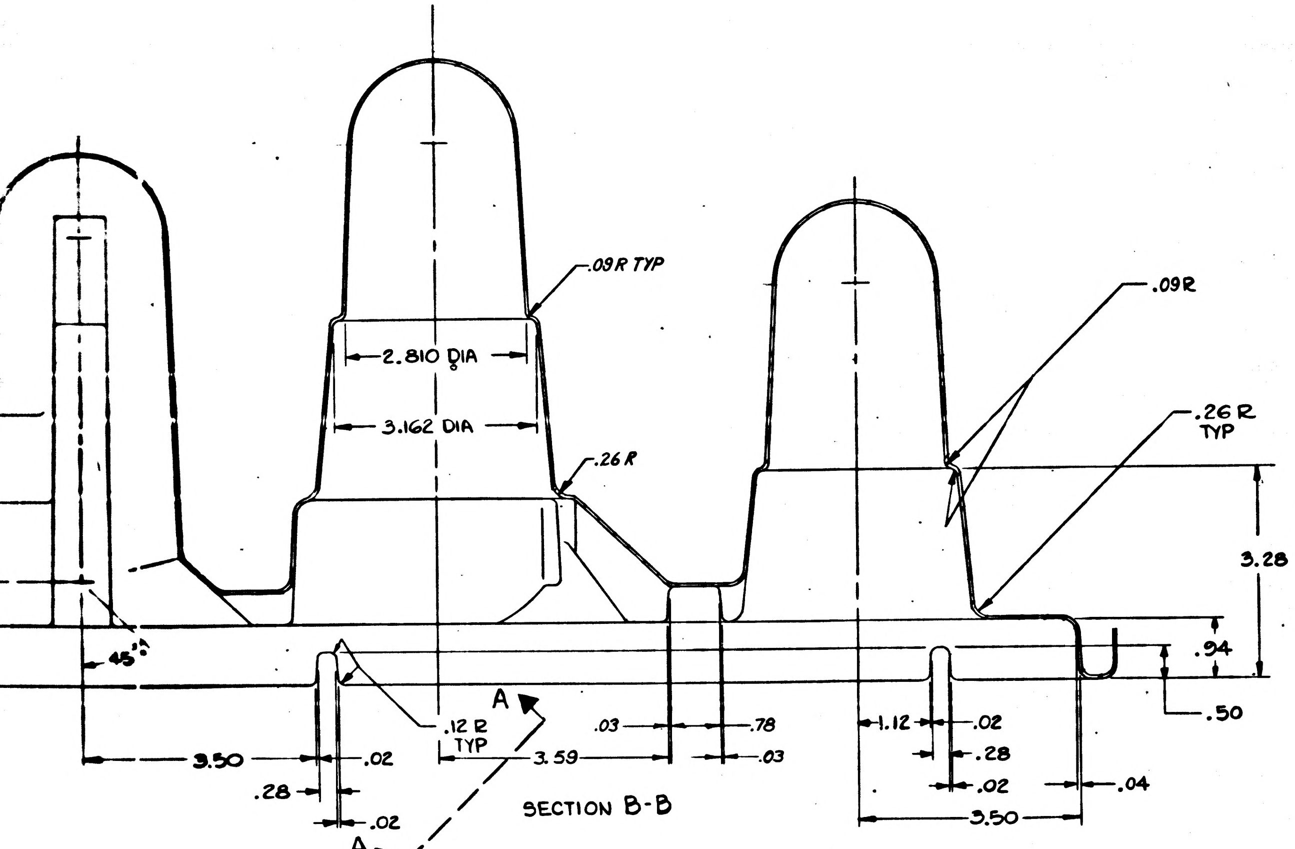
GASKET, CONNECTOR
CDU FRAME ASSEMBLY

SIZE C
CODE IDENT NO. 80230
1021307
SCALE 2:1
SHEET 1 OF 1

MIL-1082D B

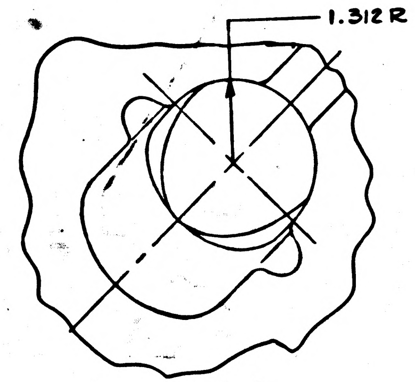
1021307

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 2532			

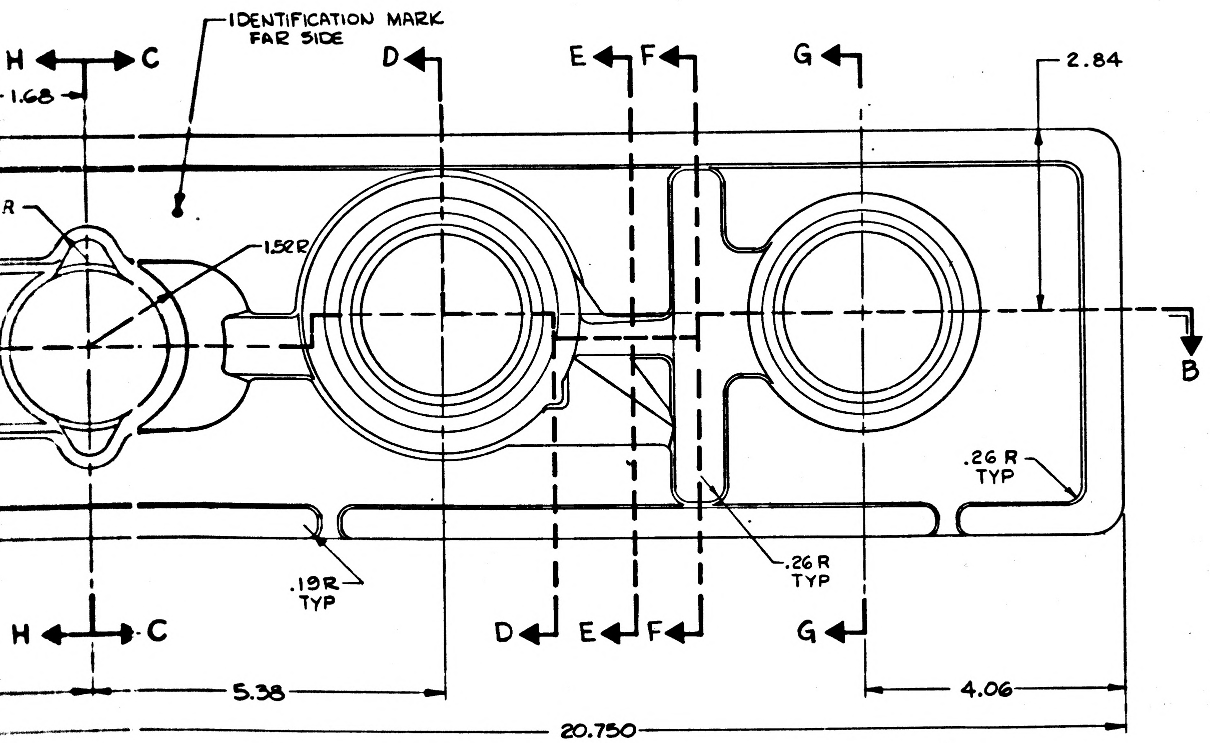


.09R TYP
2.810 DIA
3.162 DIA
.26R
.09R
.26R TYP
3.28
.94
.50
45°
.12R TYP
A
.03
.78
.03
1.12
.02
.28
.02
.04
3.50
.02
3.59
.28
.02
3.50
A

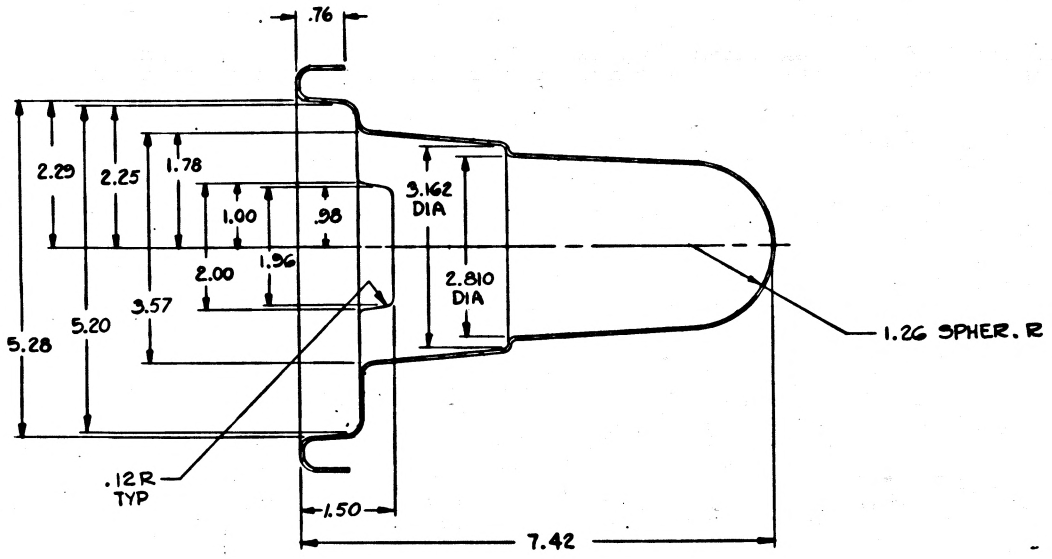
SECTION B-B



VIEW A-A



IDENTIFICATION MARK FAR SIDE
H
C
D
E
F
G
2.84
1.68
R
1.52R
B
.26R TYP
.19R TYP
.26R TYP
H
C
D
E
F
G
5.38
4.06
20.750



.76
2.29
2.25
1.78
1.00
.98
3.162 DIA
2.810 DIA
2.00
1.96
3.57
5.20
5.28
1.26 SPHER. R
.12R TYP
1.50
7.42

SECTION G-G

3H

MASTER

	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ±.015 ±2°
±.03
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Orzel DATE 10 Nov 65
CHECKED Ed Foster 15 Jan 66
APPROVAL E. Lombard 15 Jan 66
APPROVAL 1/10/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 66

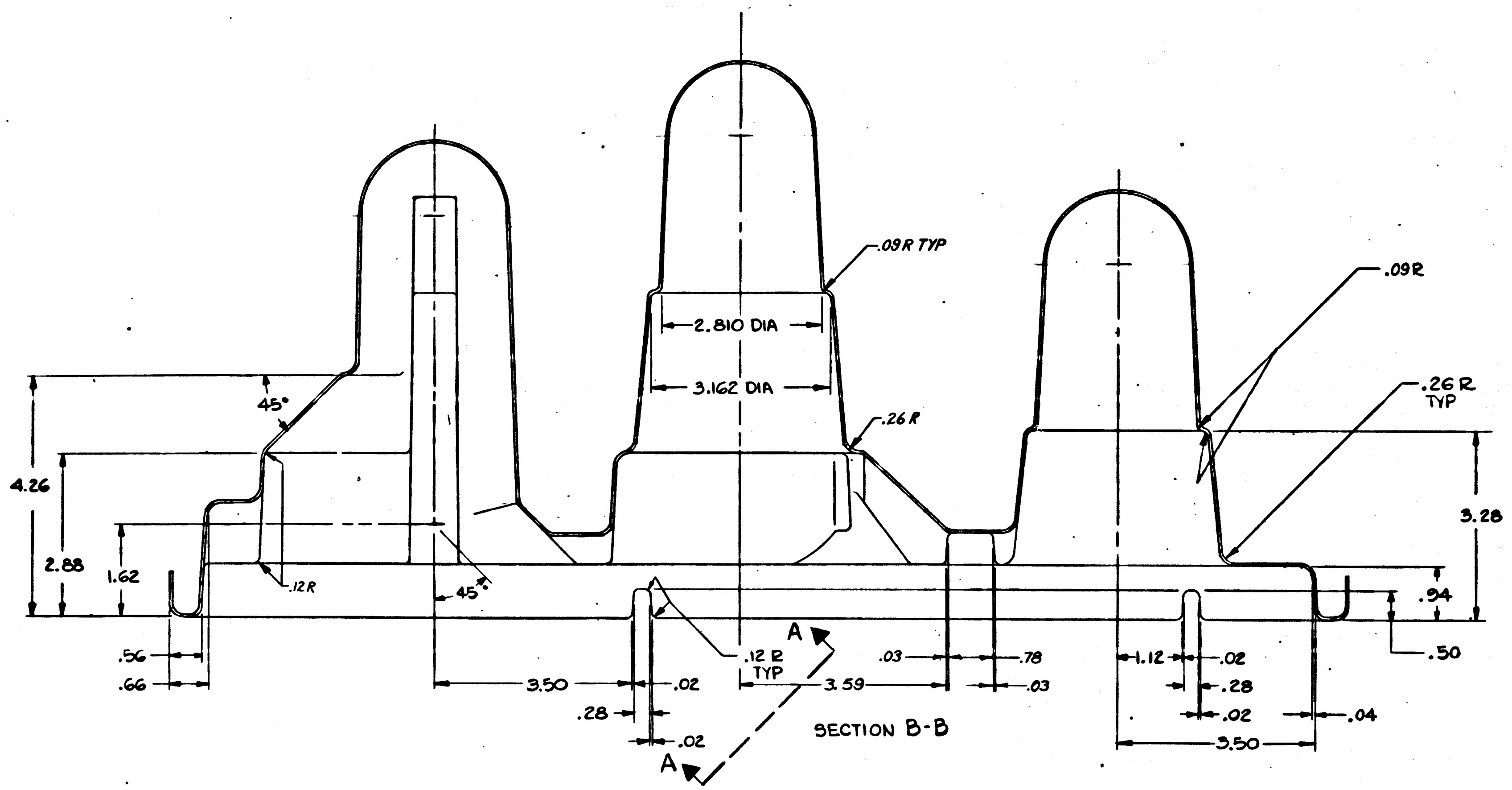
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

LINER, CASE

CODE IDENT NO. 80230
SIZE J2
1021309
SCALE FULL
SHEET 1 OF 2

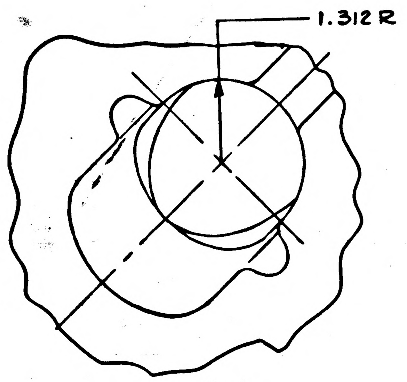
1021309	REV LTR	SH

E3

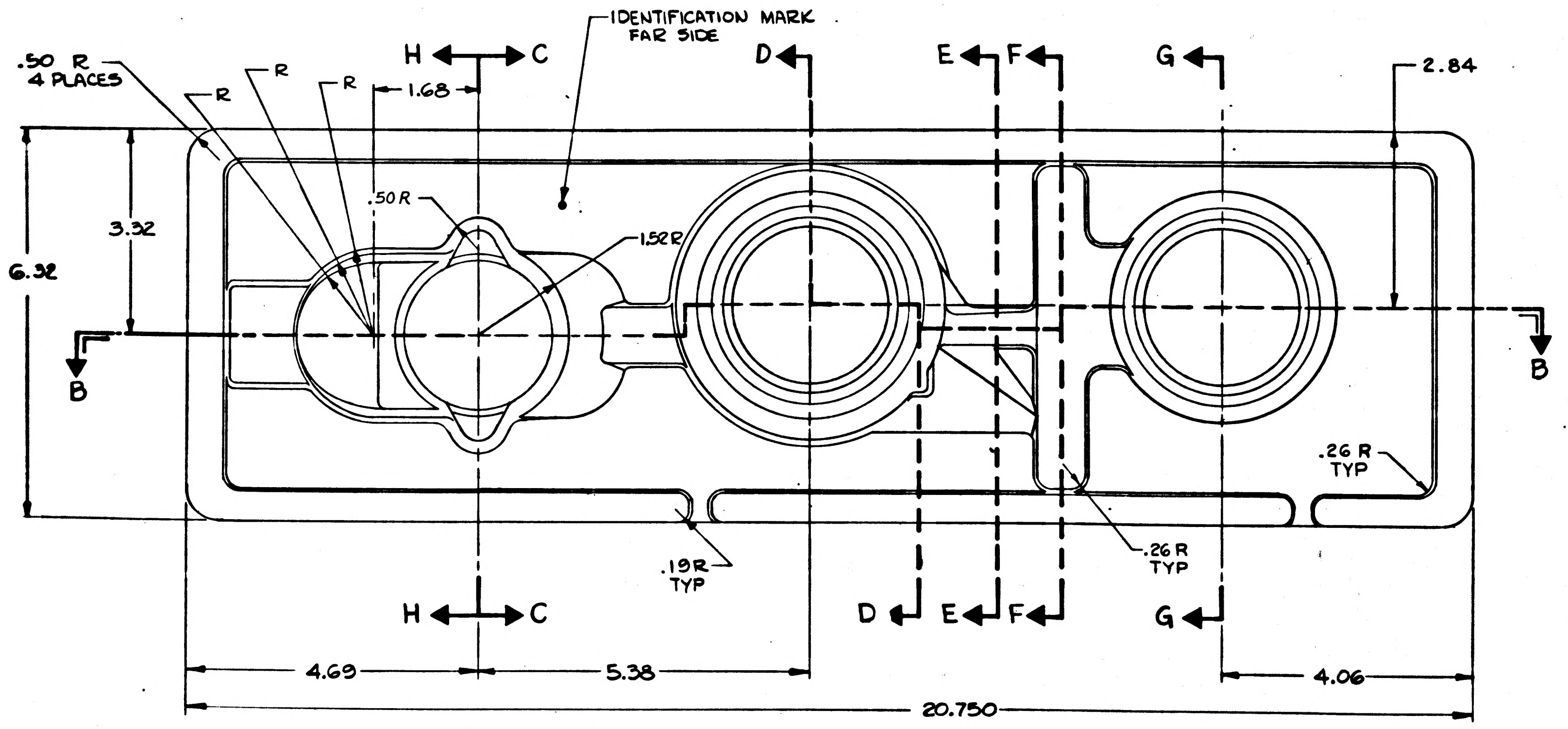


.09R TYP
2.810 DIA
3.162 DIA
.26R
.09R
.26R
TYP
45°
4.26
2.88
1.62
.12R
45°
3.28
.94
.50
.56
.66
3.50
.28
.02
.02
.12 R
TYP
A
A
3.59
.03
.78
.03
1.12
.02
.28
.02
3.50
.04

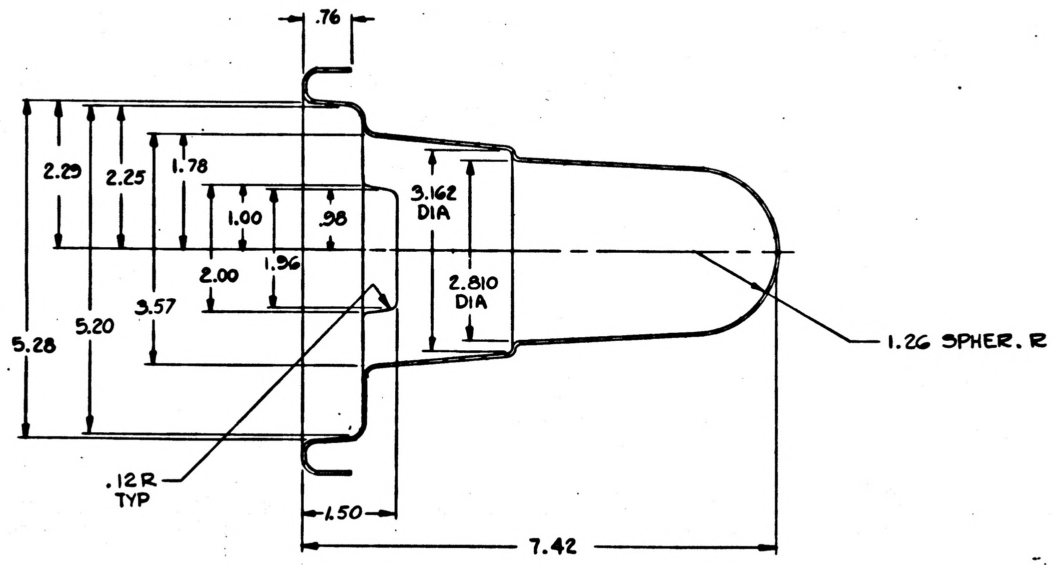
SECTION B-B



VIEW A-A

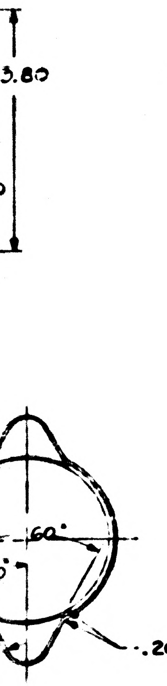


.50 R
4 PLACES
R
R
R
H
C
1.68
IDENTIFICATION MARK
FAR SIDE
D
E
F
G
2.84
.50 R
1.52R
3.32
6.32
B
B
.26 R
TYP
.19R
TYP
.26R
TYP
H
C
D
E
F
G
4.69
5.38
4.06
20.750



.76
2.29
2.25
1.78
1.00
.98
3.162
DIA
2.00
1.96
2.810
DIA
3.57
5.20
5.28
1.26 SPHER. R
.12R
TYP
1.50
7.42

SECTION G-G



3.80
60°
.26 R TYP

CTION A-A

SYM	ZONE	
A		INITIAL RELEASE [illegible] PER TDRR [illegible]

MASTER

	102 256-02
1021314	102 256-0[illegible]
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	±.015	+ 2°
−	±.03	−

DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

CONTRACT NAS 9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Cryel [illegible] 65
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]

NASA APPROVAL A. C. METZLER
MIT APPROVAL [illegible]

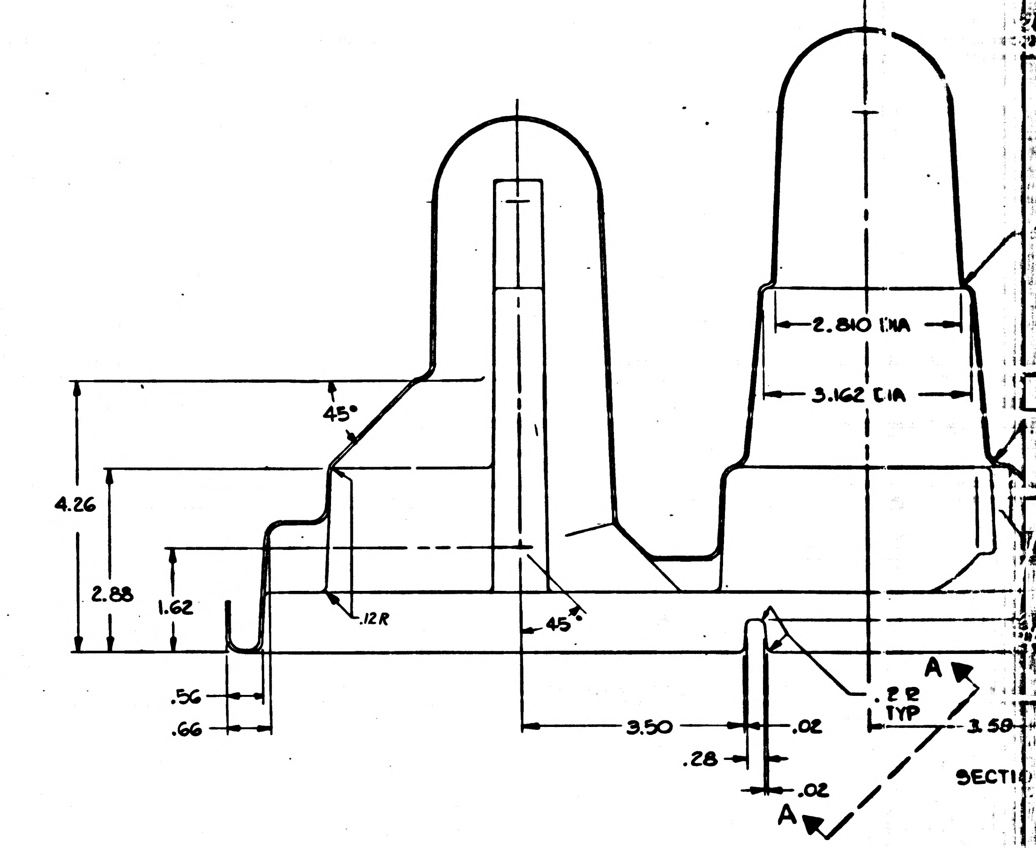
CODE IDENT NO
80230

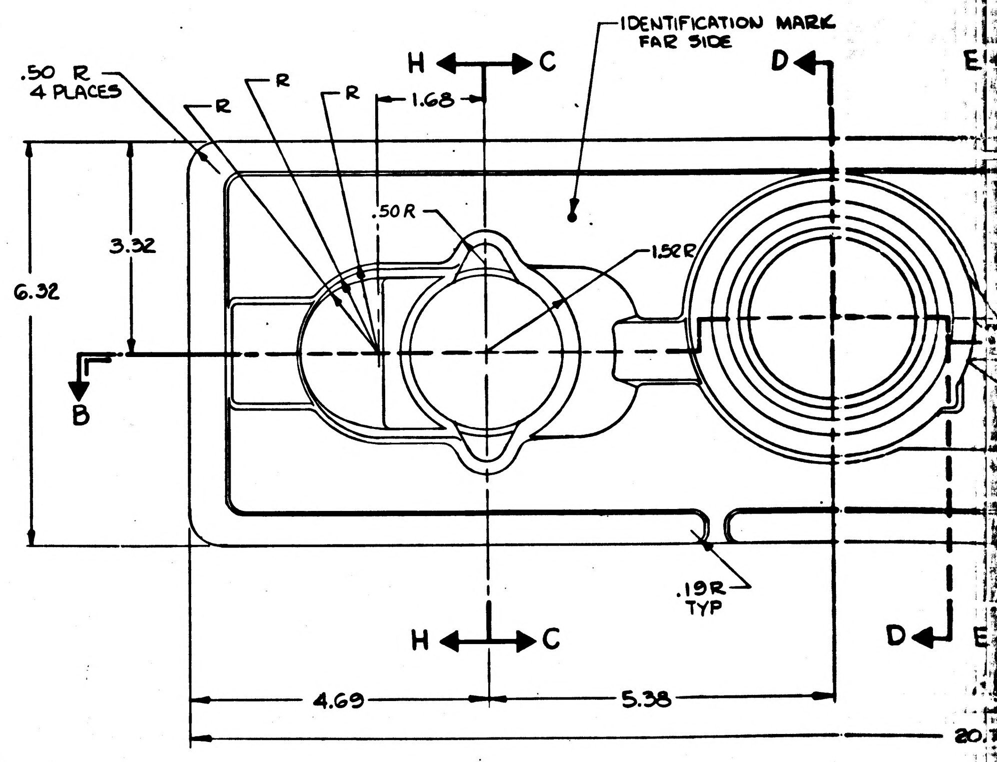
SCALE [illegible]

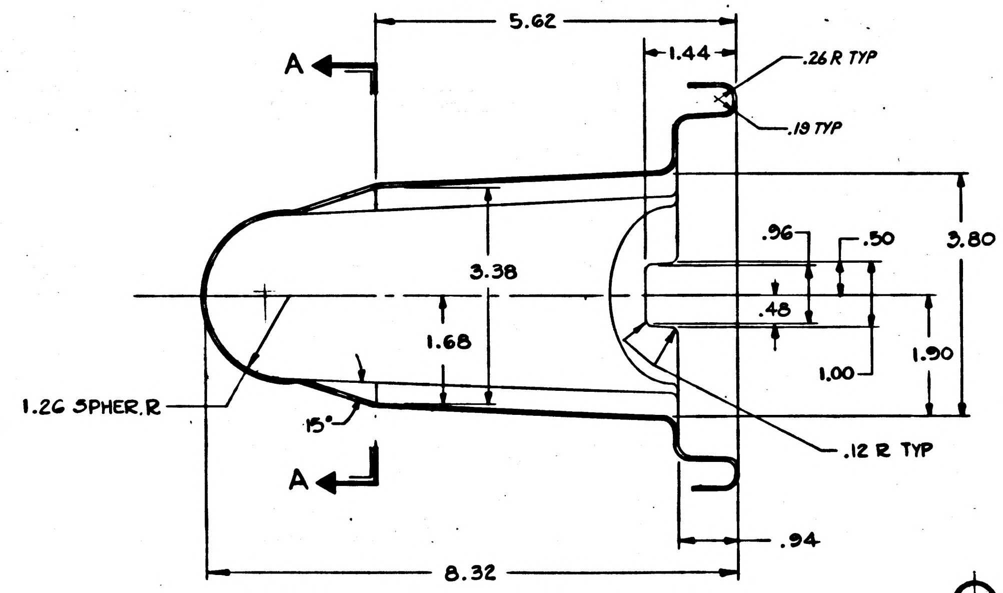
1021309 REV LTR A SH 1 OF 2

NOTES:

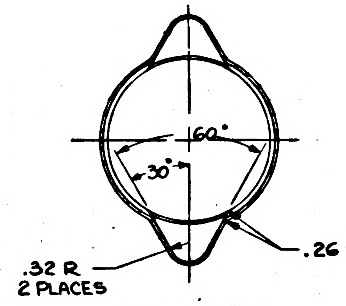
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ABS PLASTIC SHEET PER ASTM-D-1788-62T TYPE 3, GRADE 1, COLOR GRAY # 36231 OF FED-STD-595.
3. UNLESS OTHERWISE SPECIFIED:
   - A. SURFACE ROUGHNESS TO BE AS DRAWN WITH GRAIN EFFECT ON OUTER SURFACE OF LINER.
   - B. DRAW MARKS ARE ALLOWABLE ON INSIDE SURFACE OF LINER.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. LINER MAY BE RESTRAINED TO FACILITATE DIMENSIONAL INSPECTION.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. THICKNESS TO BE .040-.060 WITHIN .12 OF EDGE.


2.810 DIA
3.162 DIA
45°
4.26
2.88
1.62
.12 R
45°
.56
.66
3.50
.02
.28
.02
.22 R TYP
3.58
A
A
SECTI


IDENTIFICATION MARK FAR SIDE
.50 R 4 PLACES
R
R
R
1.68
H
C
D
E
.50 R
1.52 R
3.32
6.32
B
.19 R TYP
H
C
D
E
4.69
5.38
20.1


5.62
1.44
.26 R TYP
.19 TYP
A
3.38
.96
.50
3.80
.48
1.68
1.00
1.90
1.26 SPHER. R
15°
.12 R TYP
A
.94
8.32

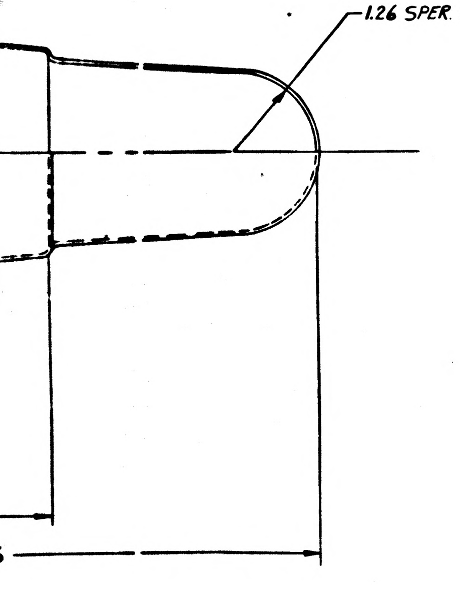
SECTION C-C


60°
30°
.32 R 2 PLACES
.26 R TYP

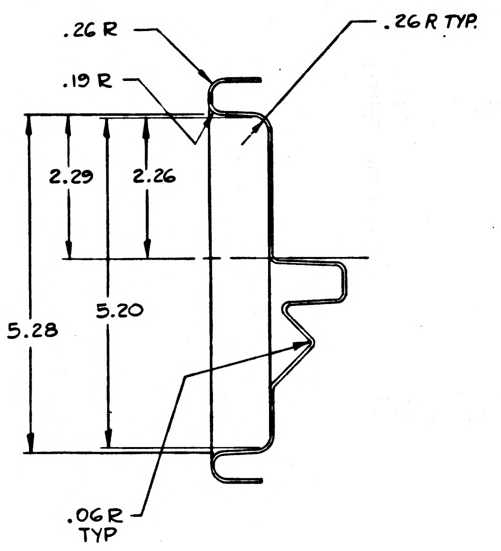
SECTION A-A

1021309 REV LTR A SH 1 OF 2

REVISIONS 25321					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			

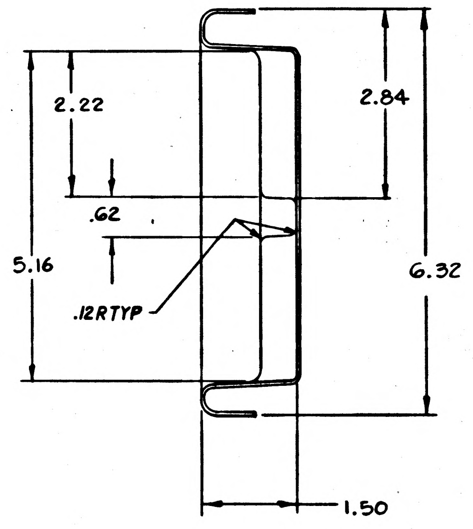


-D



.26 R
.19 R
.26 R TYP.
2.29
2.26
5.28
5.20
.06 R
TYP

SECTION E-E



2.22
2.84
.62
5.16
6.32
.12R TYP
1.50

SECTION F-F

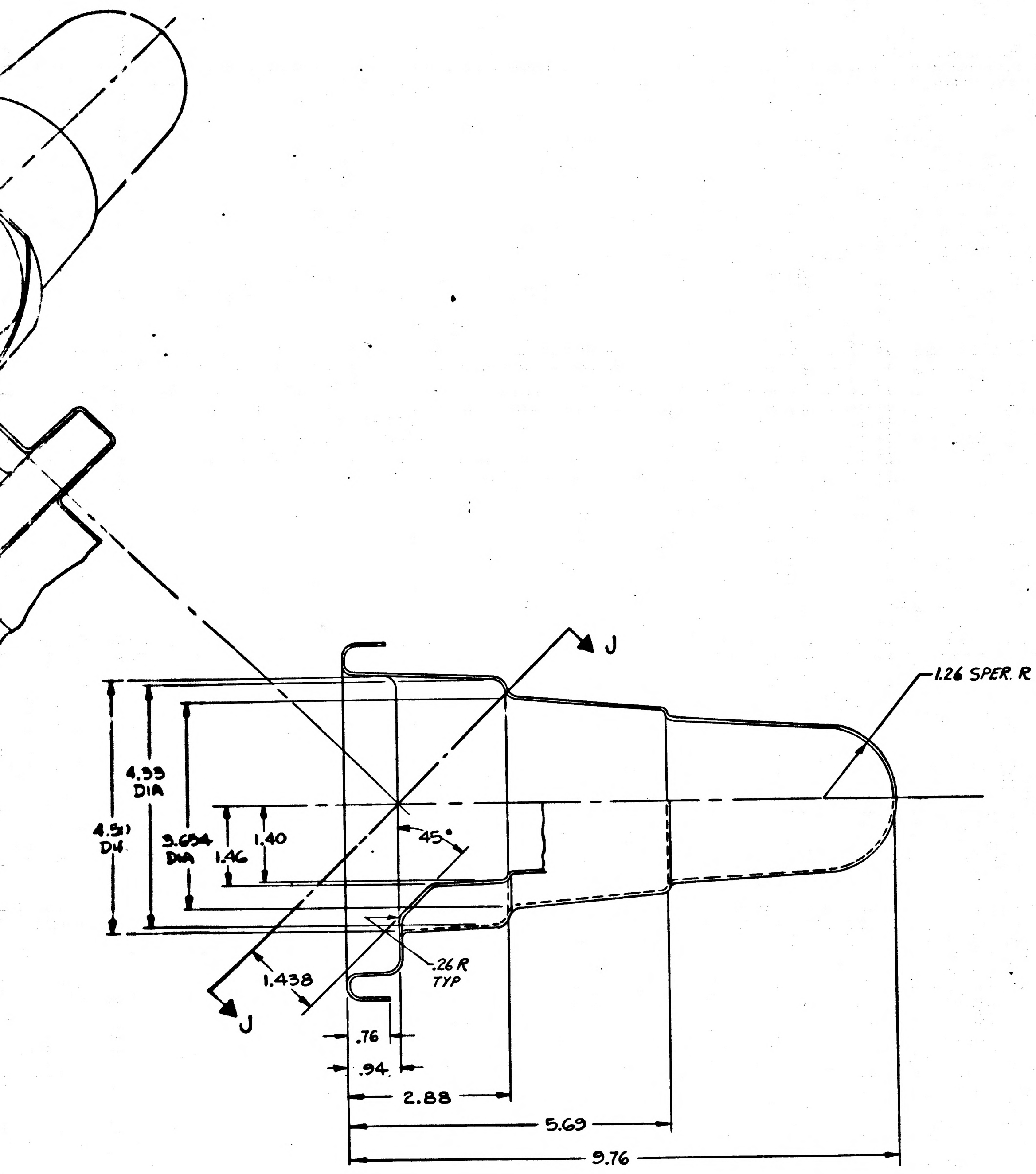
3H

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .03 3 PLACE DECIMALS ± .015 ANGLES ± 2° DO NOT SCALE THIS DRAWING MATERIAL APPROVAL	M I T INSTRUMENTATION LAB CAMBRIDGE MASS DRAWN Orzel DATE 12 NOV 65 CHECKED [illegible] 15 JAN 66 APPROVAL [illegible] 5 JAN 66 CONTRACT NAS 9-497 NASA APPROVAL A. C. METZGER [illegible] 1/18/66 MIT APPROVAL [illegible]	MANNED SPACECRAFT CENTER HOUSTON, TEXAS LINER, CASE SIZE J2 CODE IDENT NO. 80230 1021309 SCALE FULL SHEET 2 OF 2

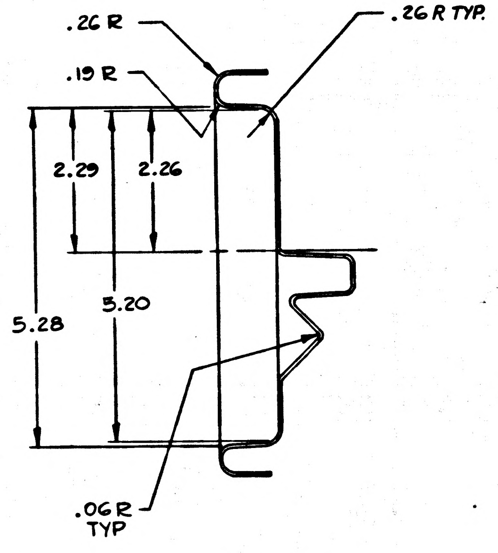
1021309 REV [illegible] SH 2

F3



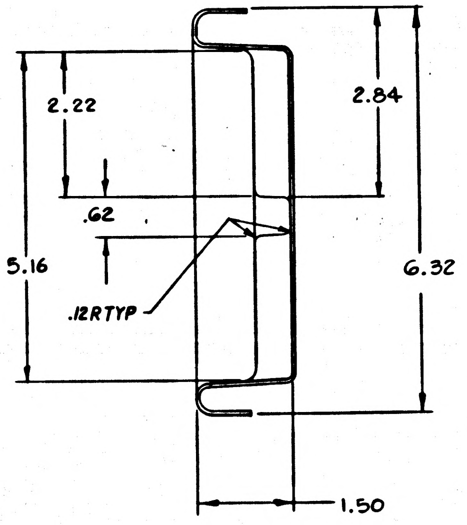
J
J
1.26 SPER. R
4.33 DIA
4.51 DIA
3.654 DIA
1.46
1.40
45°
1.438
.26 R TYP
.76
.94
2.88
5.69
9.76

SECTION D-D



.26 R
.19 R
.26 R TYP.
2.29
2.26
5.28
5.20
.06 R TYP

SECTION E-E



2.22
2.84
.62
5.16
6.32
.12R TYP
1.50

SECTION F-F

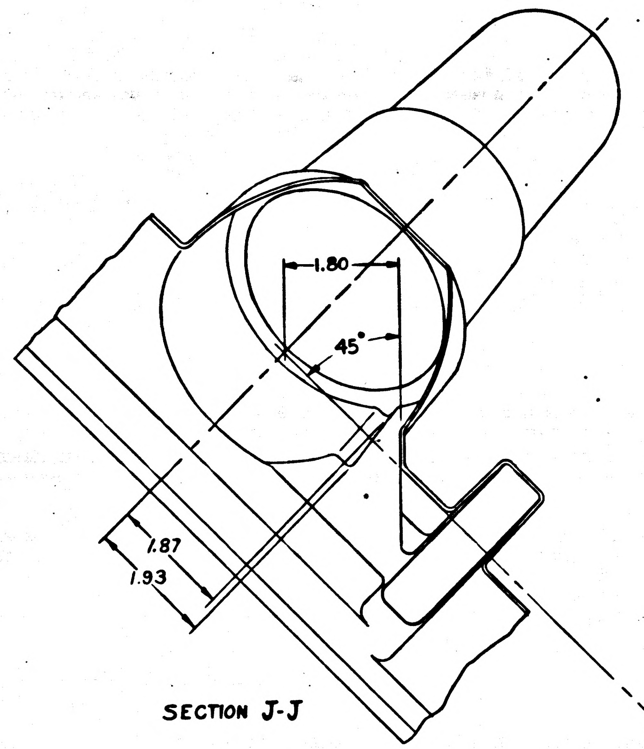
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .015
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

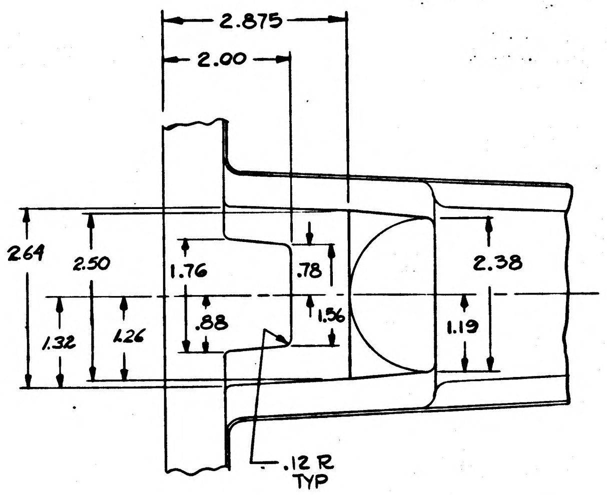
MIT
INSTRUMENTATION
[illegible]
DRAWN
CHECKED
APPROVAL
CONTRACT NAS 9-
NASA APPROVAL
MIT APPROVAL

1021309 | REV LTR | SH 2 OF 2

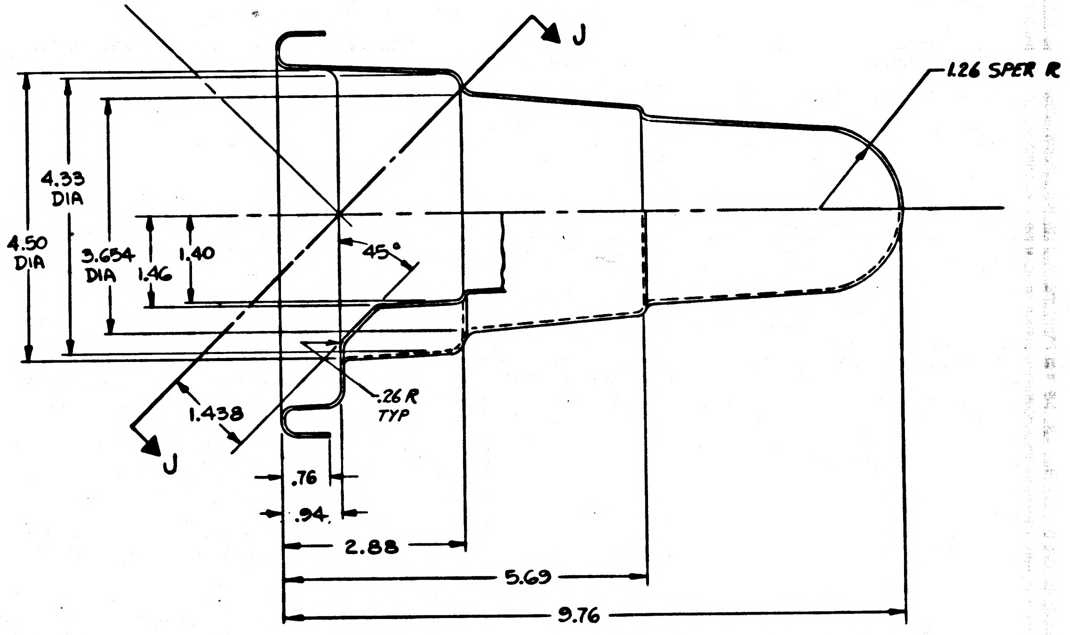
F-2


1.80
45°
1.87
1.93

SECTION J-J


2.875
2.00
2.64
2.50
1.76
.78
2.38
.88
1.56
1.19
1.32
1.26
.12 R
TYP

SECTION H-H


J
1.26 SPER R
4.33
DIA
4.50
DIA
3.654
DIA
1.46
1.40
45°
1.438
.26 R
TYP
J
.76
.94
2.88
5.69
9.76

SECTION D-D

1021309

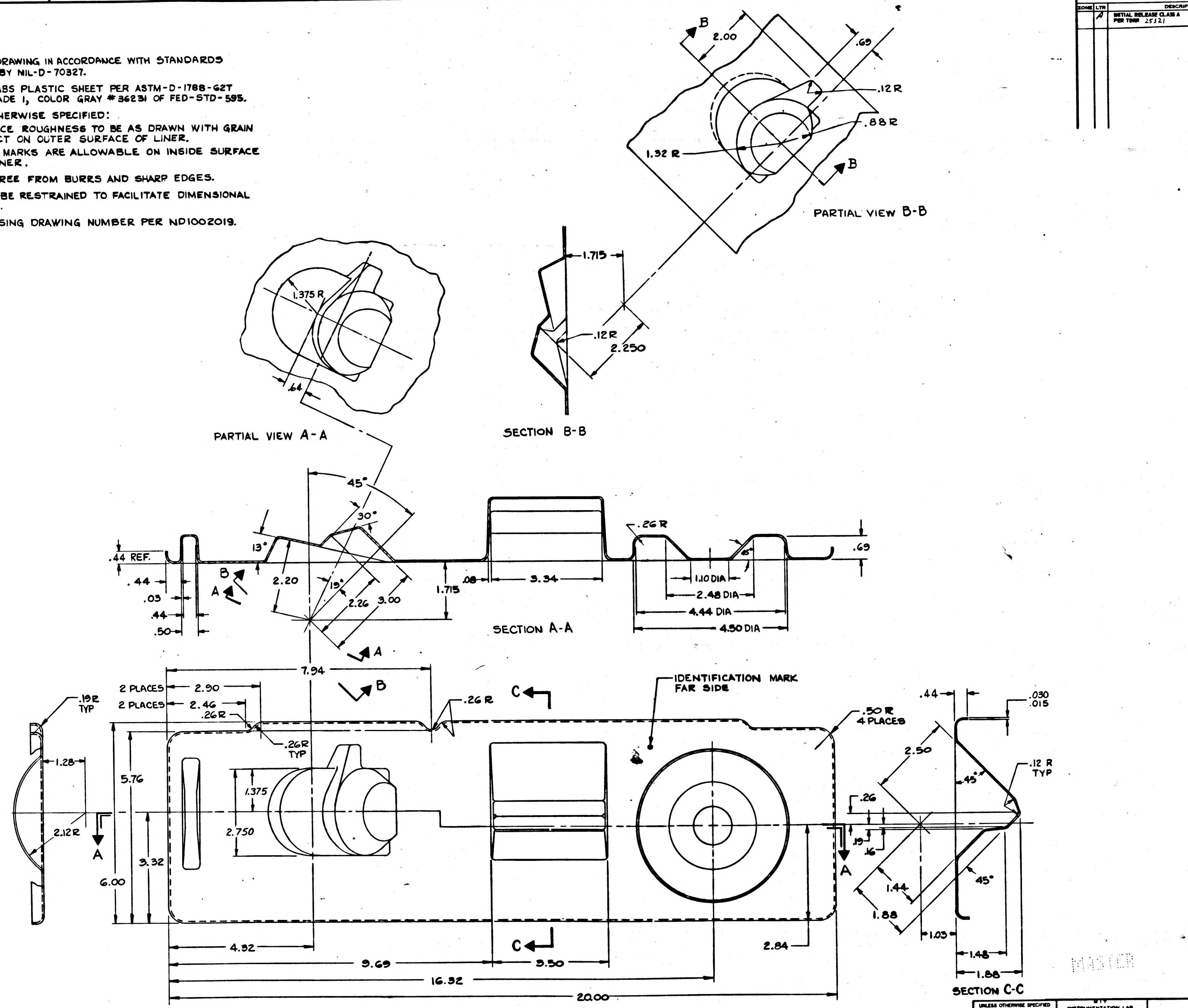
REV LTR

SH 2 OF 2

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			

NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY NIL-D-70327.
2. MATERIAL: ABS PLASTIC SHEET PER ASTM-D-1788-62T TYPE 3, GRADE 1, COLOR GRAY #36231 OF FED-STD-595.
3. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS TO BE AS DRAWN WITH GRAIN EFFECT ON OUTER SURFACE OF LINER.
   B. DRAW MARKS ARE ALLOWABLE ON INSIDE SURFACE OF LINER.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. LINER MAY BE RESTRAINED TO FACILITATE DIMENSIONAL INSPECTION.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.


PARTIAL VIEW B-B
2.00
.69
.12 R
.88 R
1.32 R
B
1.715
.12R
2.250
SECTION B-B
1.375 R
.64
PARTIAL VIEW A-A
45°
30°
13°
.44 REF.
.44
.03
.44
.50
B
A
2.20
19°
2.26
3.00
1.715
.08
3.34
.26 R
1.10 DIA
2.48 DIA
4.44 DIA
4.50 DIA
45°
.69
SECTION A-A
7.94
2 PLACES 2.90
2 PLACES 2.46
.26R
.19R TYP
.26R TYP
.26 R
C
IDENTIFICATION MARK FAR SIDE
.50 R 4 PLACES
1.28
2.12R
5.76
6.00
3.32
1.375
2.750
4.32
9.69
3.50
16.32
20.00
2.84
.44
.030 .015
2.50
.12 R TYP
.26
.19
.16
1.44
1.88
1.03
1.48
1.88
45°
SECTION C-C

MASTER

	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + −
DECIMALS ±.015 ±.03
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN 23 NOV 65
CHECKED Ed Foster 15 Jan 66
APPROVAL 15 JAN 66
APPROVAL
NASA APPROVAL A. C. METZGER
MIT APPROVAL 18 Jan 6

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

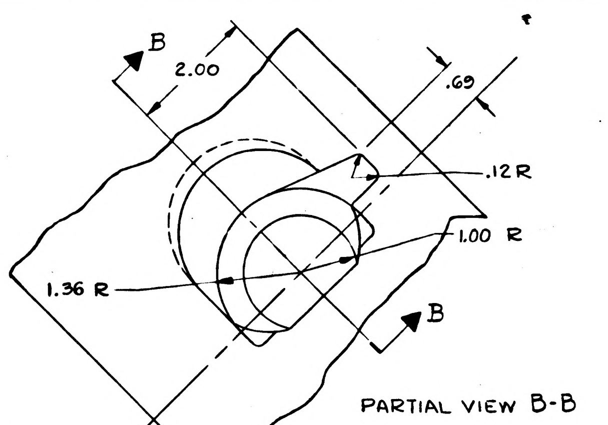
LINER, COVER

CODE IDENT NO. 80230
SIZE E
1021310
SCALE FULL
SHEET OF

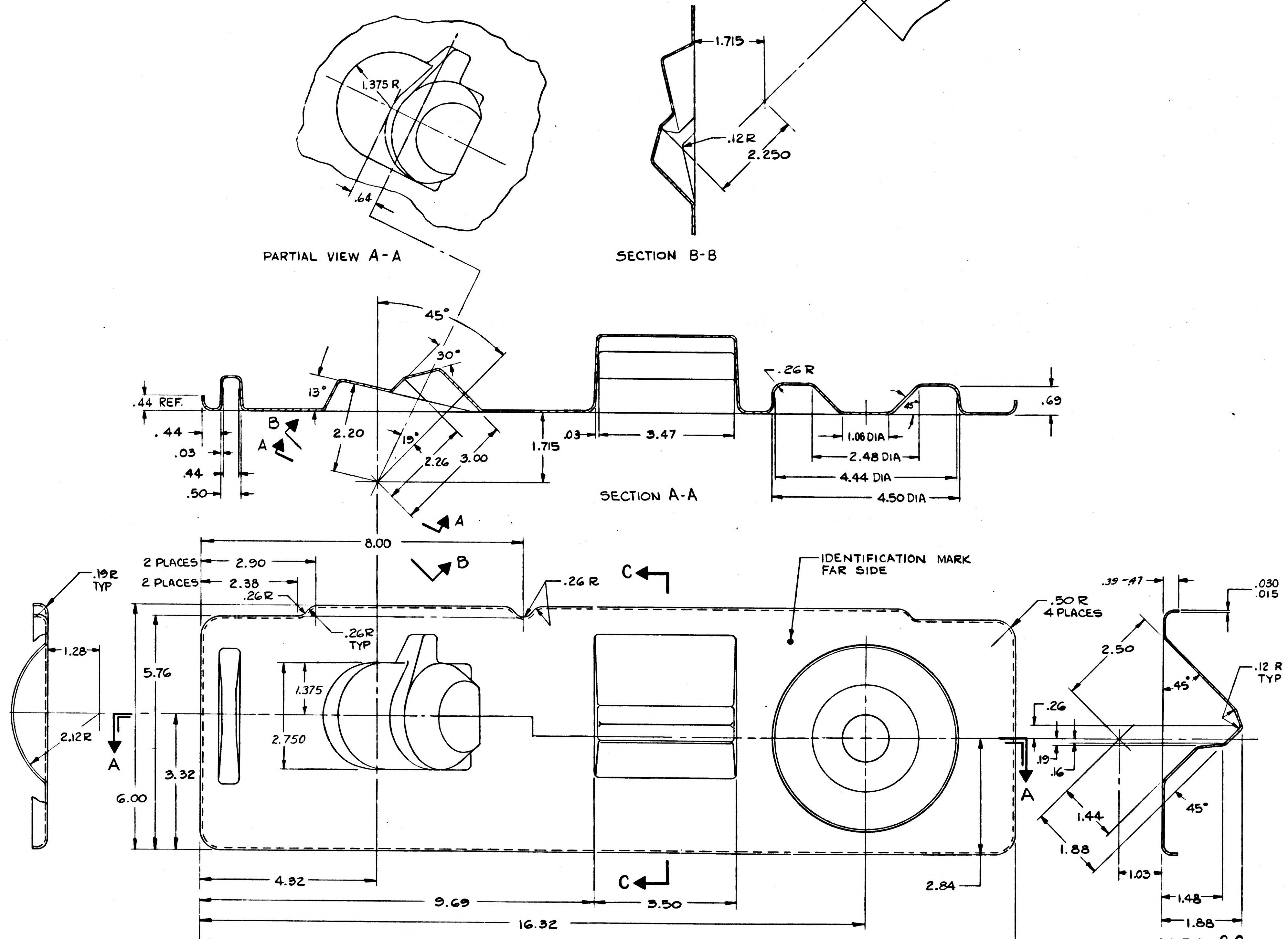
NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ABS PLASTIC SHEET PER ASTM-D-1788-62T TYPE 3, GRADE 1, COLOR GRAY #36231 OF FED-STD-595.
3. UNLESS OTHERWISE SPECIFIED:
   - A. SURFACE ROUGHNESS TO BE AS DRAWN WITH GRAIN EFFECT ON OUTER SURFACE OF LINER.
   - B. DRAW MARKS ARE ALLOWABLE ON INSIDE SURFACE OF LINER.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. LINER MAY BE RESTRAINED TO FACILITATE DIMENSIONAL INSPECTION.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 2532			
	B	REVISED PER TDRR 28142		23 6	MP CP


B
2.00
.69
.12 R
1.00 R
1.36 R
B

PARTIAL VIEW B-B


1.375 R
.64
PARTIAL VIEW A-A
1.715
.12 R
2.250
SECTION B-B
45°
30°
13°
15°
.44 REF.
.44
.03
.44
.50
B
A
2.20
2.26
3.00
1.715
.03
3.47
.26 R
1.06 DIA
2.48 DIA
4.44 DIA
4.50 DIA
45°
.69
SECTION A-A
A
8.00
B
2 PLACES 2.90
2 PLACES 2.38
.26R
.26R TYP
.26 R
C
IDENTIFICATION MARK FAR SIDE
.50 R 4 PLACES
.19R TYP
1.28
2.12R
A
5.76
6.00
3.32
1.375
2.750
A
2.84
4.32
9.69
3.50
16.32
20.00
C
.39 -.47
.030 .015
2.50
45°
.12 R TYP
.26
.19
.16
1.44
1.88
45°
1.03
1.48
1.88

SECTION C-C

	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS ±.015 ±.03 ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
Cambridge Mass
DRAWN Orgel DATE 23 Nov 65
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lombard 5 JAN 66
APPROVAL R. Boss 1/18/66
NASA APPROVAL A. C. Metzger
MIT APPROVAL W Kupfer 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

LINER, COVER

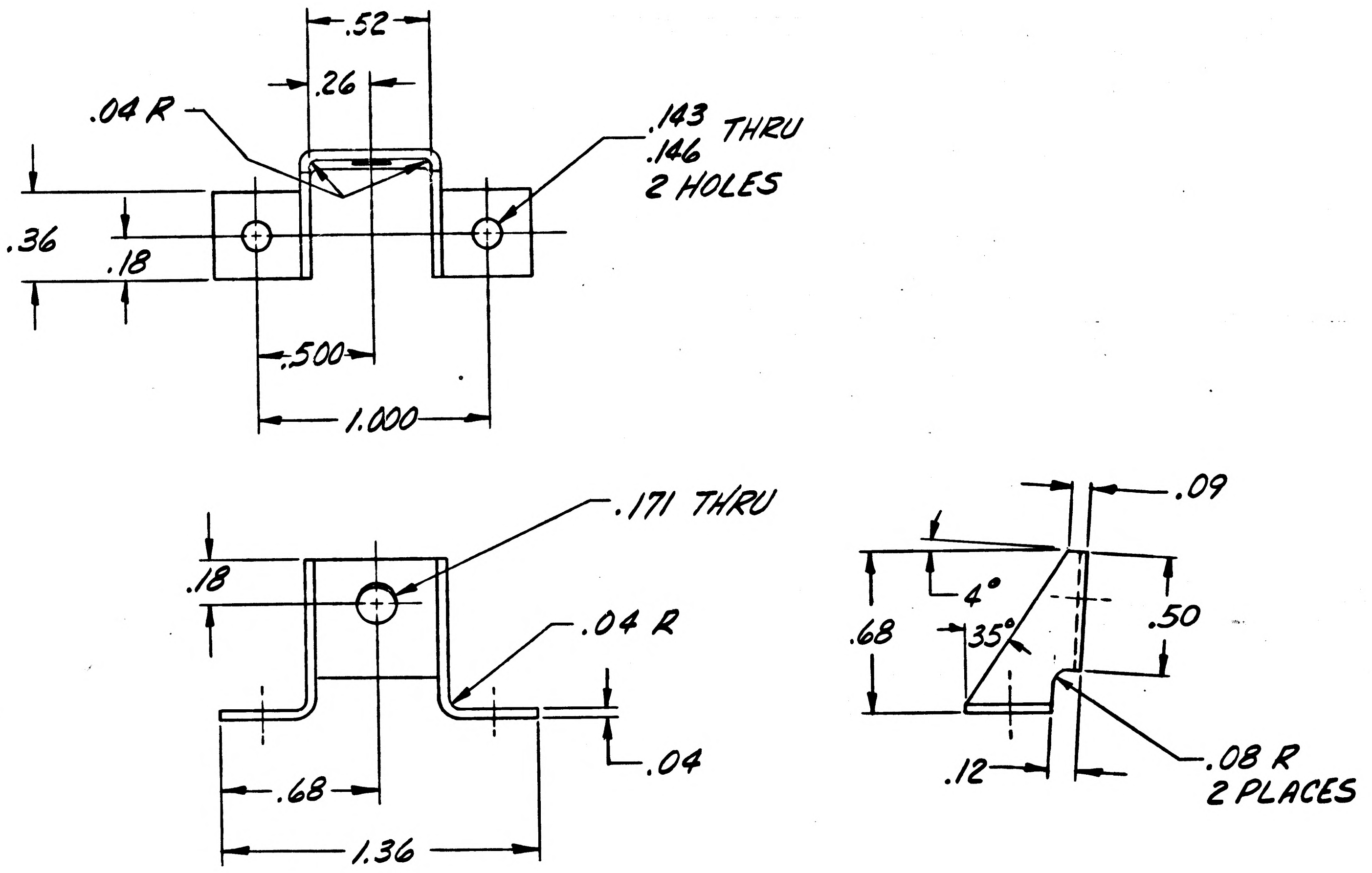
CODE IDENT NO 80230
SIZE E
1021310
SCALE FULL
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER O (6061 AL ALY).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 25321			



	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS ±.02 ±.005 ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN T. Kosmatka DATE 5 JAN 66
CHECKED Ed Foster 15 JAN66
APPROVAL E. Lemkuil 16JAN66
APPROVAL R.H. Bros 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STOP, COVER

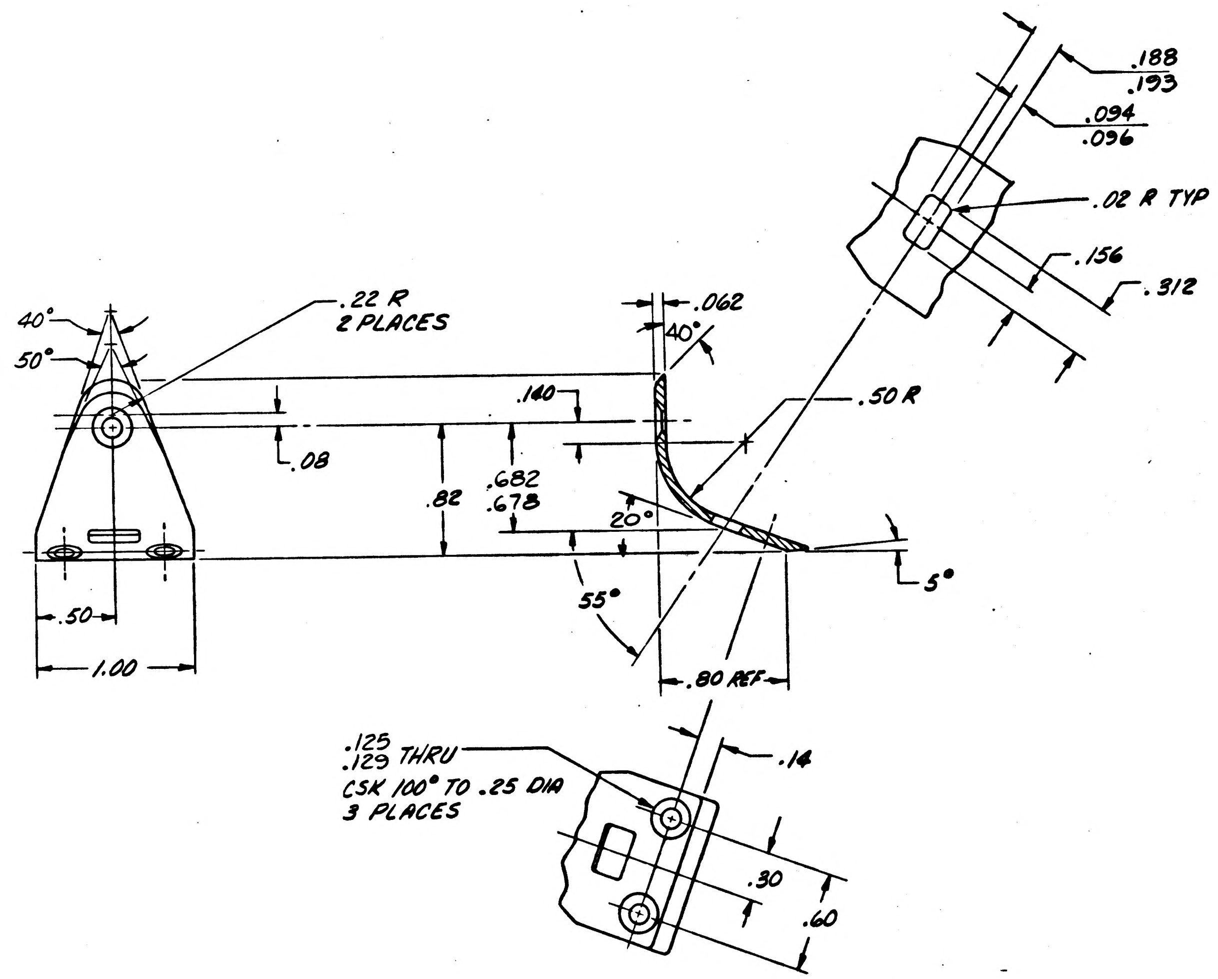
CODE IDENT NO. 80230
SIZE C
1021311
SCALE 2:1
SHEET 1 OF 1

MIL 1077C-P

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (6061 AL ALY).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625 TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	INITIAL RELEASE CLASS A PER TDRR 25321			



.188
.193
.094
.096
.02 R TYP
.156
.312
.062
40°
.50 R
40°
50°
.22 R
2 PLACES
.140
.08
.82
.682
.678
20°
5°
55°
.80 REF
.50
1.00
.125
.129 THRU
CSK 100° TO .25 DIA
3 PLACES
.14
.30
.60

	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Kosmatka DATE 6 JAN 66
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Jankowski 15 JAN 66
CONTRACT Contract NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STRIKE, CATCH

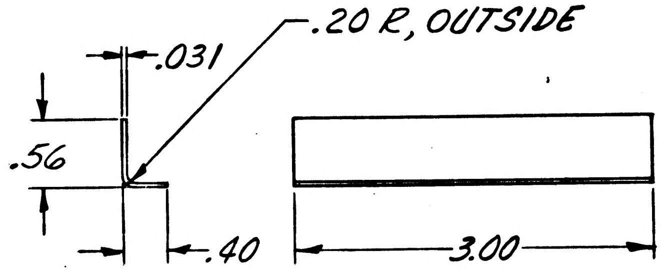
SIZE D
CODE IDENT NO. 80230
1021312
SCALE 2:1
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (AL ALY 6061).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625, TYPE II, COLOR GRAY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS 25321

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
Ⓜ A	INITIAL RELEASE CLASS A PER TDRR 25321			/



1021314	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+ —	±.005	+ —
−	±.02	−

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN C. M. Kulp DATE 10 JAN 66
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkuil 16 JAN 66
APPROVAL R.W. Bros 1/18/66

NASA APPROVAL A. C. METZGER

MIT APPROVAL W Kupfer 18 Jan 66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, ANGLE-
HINGE

CODE IDENT NO. 80230
SIZE B
1021313

SCALE FULL
SHEET 1 OF 1

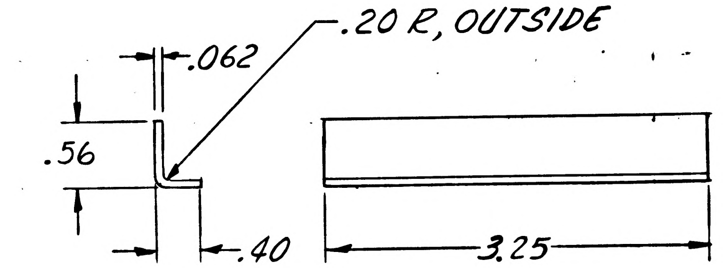
MIL 1077B-D 11-16-64

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY PER QQ-A-250/11, TEMPER T6 (AL ALY 6061).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 1, COLOR GREY.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.

REVISIONS 25321

SYM	DESCRIPTION	CHG NO.	DATE	APPD.
Ⓜ A	INITIAL RELEASE CLASS A PER TDRR 25321			
Ⓜ B	REVISED PER TDRR 26902		11 MAR 66	CW
C	REVISED PER TDRR 30789		25 OCT 66	NE SC



2010787	2021255-011
1021314	1021255-021
1021314	1021255-011
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + _ − DECIMALS ±.005 ±.02 ANGLES + _ −
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN C. M. Kulp DATE 10 JAN 66
CHECKED Ed Foster 15 JAN 66
APPROVAL E. Lemkuil 16 JAN 66
APPROVAL R.W. Bras 1/18/66
NASA APPROVAL A. C. METZGER
MIT APPROVAL W Kupfer 18 Jan 66

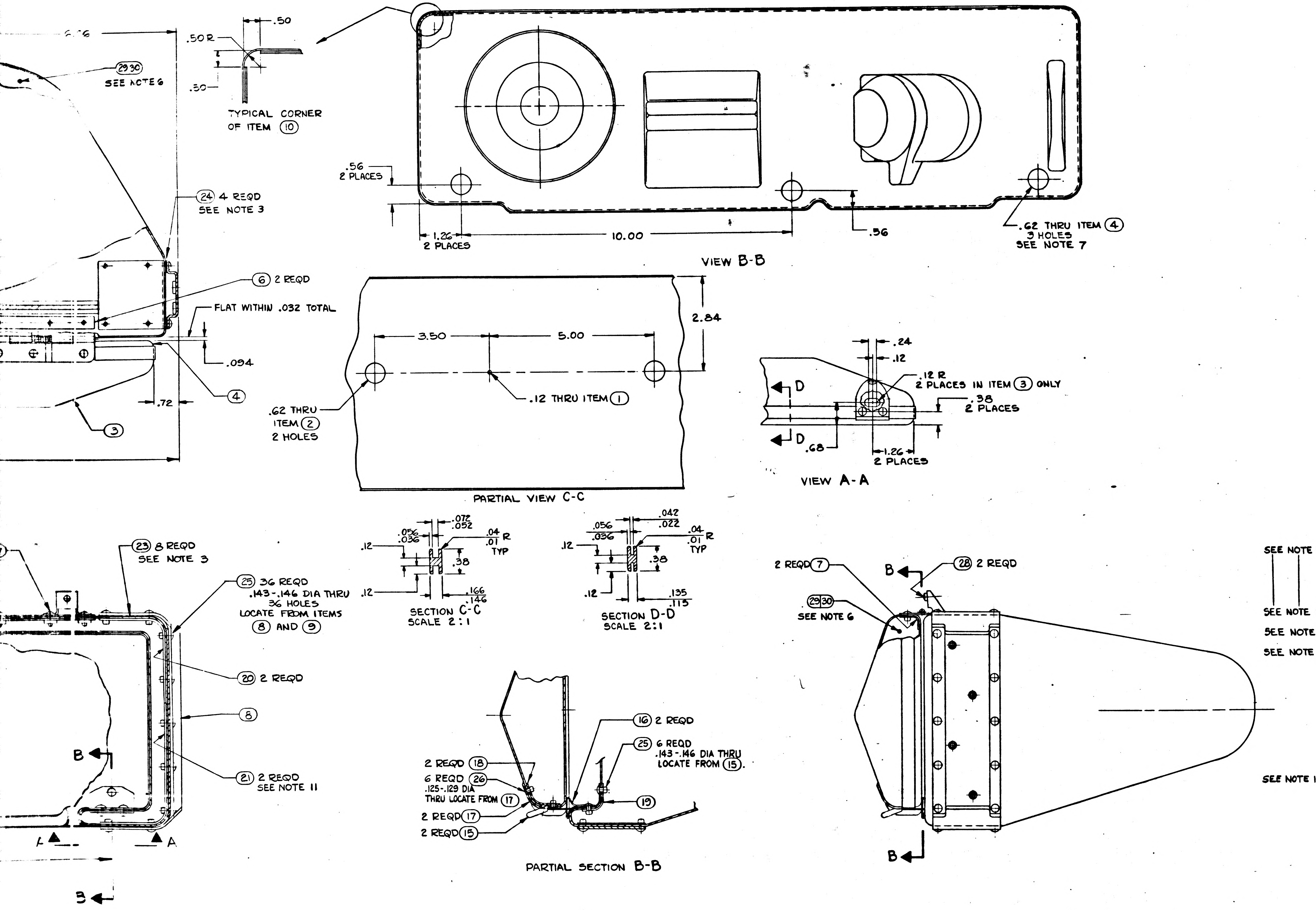
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, ANGLE-HINGE

CODE IDENT NO. 80230
SIZE B
1021313
SCALE FULL
SHEET 1 OF 1

MIL 10778-D 11-16-64

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			



.50
.50 R
.50
TYPICAL CORNER OF ITEM ⑩
(29)(30) SEE NOTE 6
(24) 4 REQD SEE NOTE 3
(6) 2 REQD
FLAT WITHIN .032 TOTAL
.094
.72
(4)
(3)
.56 2 PLACES
1.26 2 PLACES
10.00
.56
.62 THRU ITEM (4) 3 HOLES SEE NOTE 7
VIEW B-B
2.84
3.50
5.00
.62 THRU ITEM (2) 2 HOLES
.12 THRU ITEM (1)
PARTIAL VIEW C-C
.24
.12
.12 R 2 PLACES IN ITEM (3) ONLY
.38 2 PLACES
D
D
.68
1.26 2 PLACES
VIEW A-A
(23) 8 REQD SEE NOTE 3
(25) 36 REQD .143-.146 DIA THRU 36 HOLES LOCATE FROM ITEMS (8) AND (9)
(20) 2 REQD
(8)
(21) 2 REQD SEE NOTE 11
B
A
A
B
.072
.052
.056
.036
.04 R
.01 TYP
.12
.38
.12
.166
.146
SECTION C-C SCALE 2:1
.042
.022
.056
.036
.04 R
.01 TYP
.12
.38
.12
.135
.113
SECTION D-D SCALE 2:1
(16) 2 REQD
(25) 6 REQD .143-.146 DIA THRU LOCATE FROM (15).
2 REQD (18)
6 REQD (26) .125-.129 DIA THRU LOCATE FROM (17)
2 REQD (17)
2 REQD (15)
(19)
PARTIAL SECTION B-B
2 REQD (7)
(28) 2 REQD
(29)(30) SEE NOTE 6
B
B

SEE NOTE 10	35	AR	1010686	CATALYST (CLEAR)
	34	AR	1010657	EPOXY RESIN (CLEAR)
	33	6	1010868-2	RIVET, BLIND, UNIVERSAL HEAD
	32	AR	1010661	EPOXY RESIN
	31	AR	1010679	ADHESIVE ACTIVATOR
	30	AR	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10	29	AR	1010863	POLYURETHENE RESIN
	28	2		BUMPER, RUBBER
SEE NOTE 10	27	6	1010618-14	SCREW, BUTTON HEAD
	26	6	MS20603B4-12	RIVET, BLIND, CHEM. EXP.
SEE NOTE 10	25	44	1010868-3	RIVET, BLIND, UNIVERSAL HEAD
	24	4		SHIM-LAMINATED
	23	8		SHIM-LAMINATED
	22	2	1021311	STOP, COVER
	21	2	1021275	BRACKET, ANGLE-LOWER
	20	2	1021273	BRACKET, ANGLE-UPPER
	19	2	1021276	BRACKET, ANGLE, CATCH
	18	2	1021280	BRACKET, ANGLE, STRIKE
	17	2	1021312	STRIKE, CATCH
	16	2	1021264	SPRING, TENSION
	15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)
	14	2	1021279	BRACKET, ANGLE
SEE NOTE 10	13	2	1011288-1	PLUNGER, QUICK RELEASE
	12	1	1021277	HOLDER, FILTER
	11		1021314-002	SEAL, PLASTIC
	10		1021314-001	SEAL, PLASTIC
	9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
	8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
	7	2	1021313	BRACKET, ANGLE, HINGE
	6	2	1021278	STRIP, REINFORCING, HINGE (INSEP ASSY)
	5	2	1021265	HINGE, BUTT (INSEP. ASSY)
	4	1	1021310	LINER, COVER
	3	1	1021257	COVER, CASE
	2	1	1021309	LINER, CASE
	1	1	1021256	CASE, STOWAGE
	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021255-021 1021255-011	1021255-021 1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±-
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Oszek DATE
CHECKED 5 JAN 66
APPROVAL 5 JAN 66
CONTRACT NAS 9-497
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

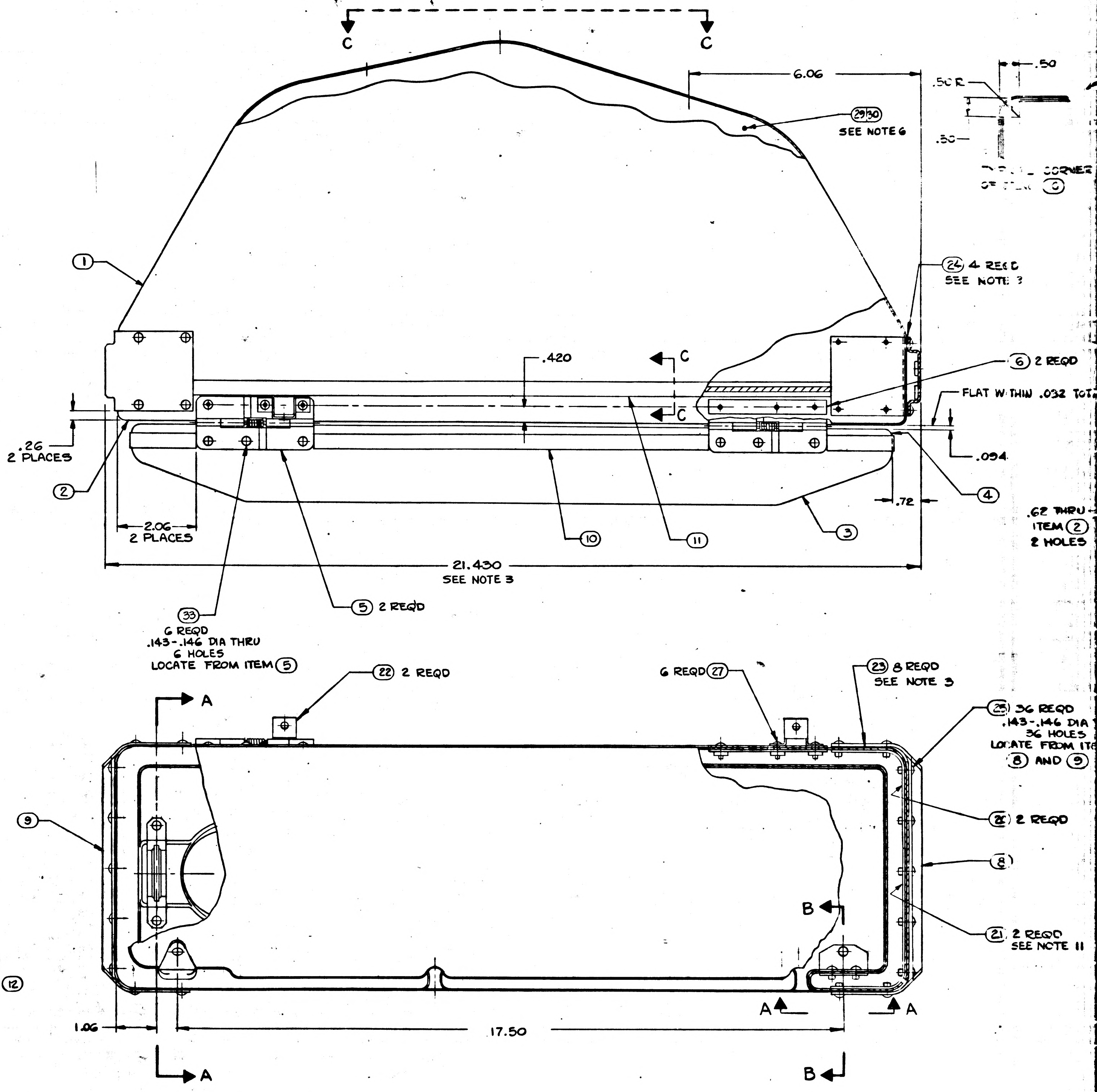
CASE,
EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

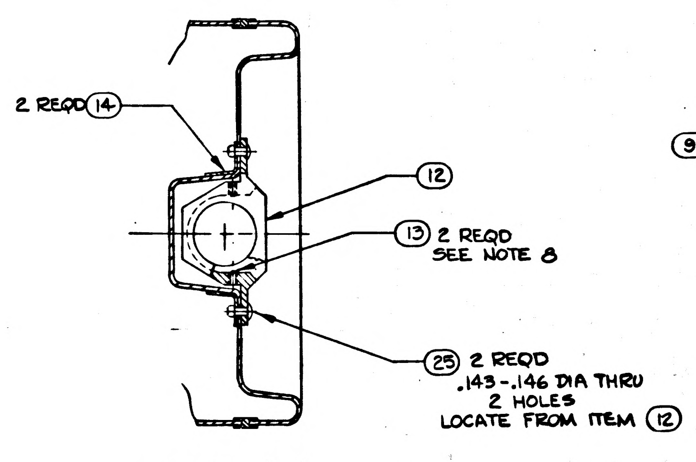
SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET OF

1021314	REV LTR	SH
		1

NOTES :

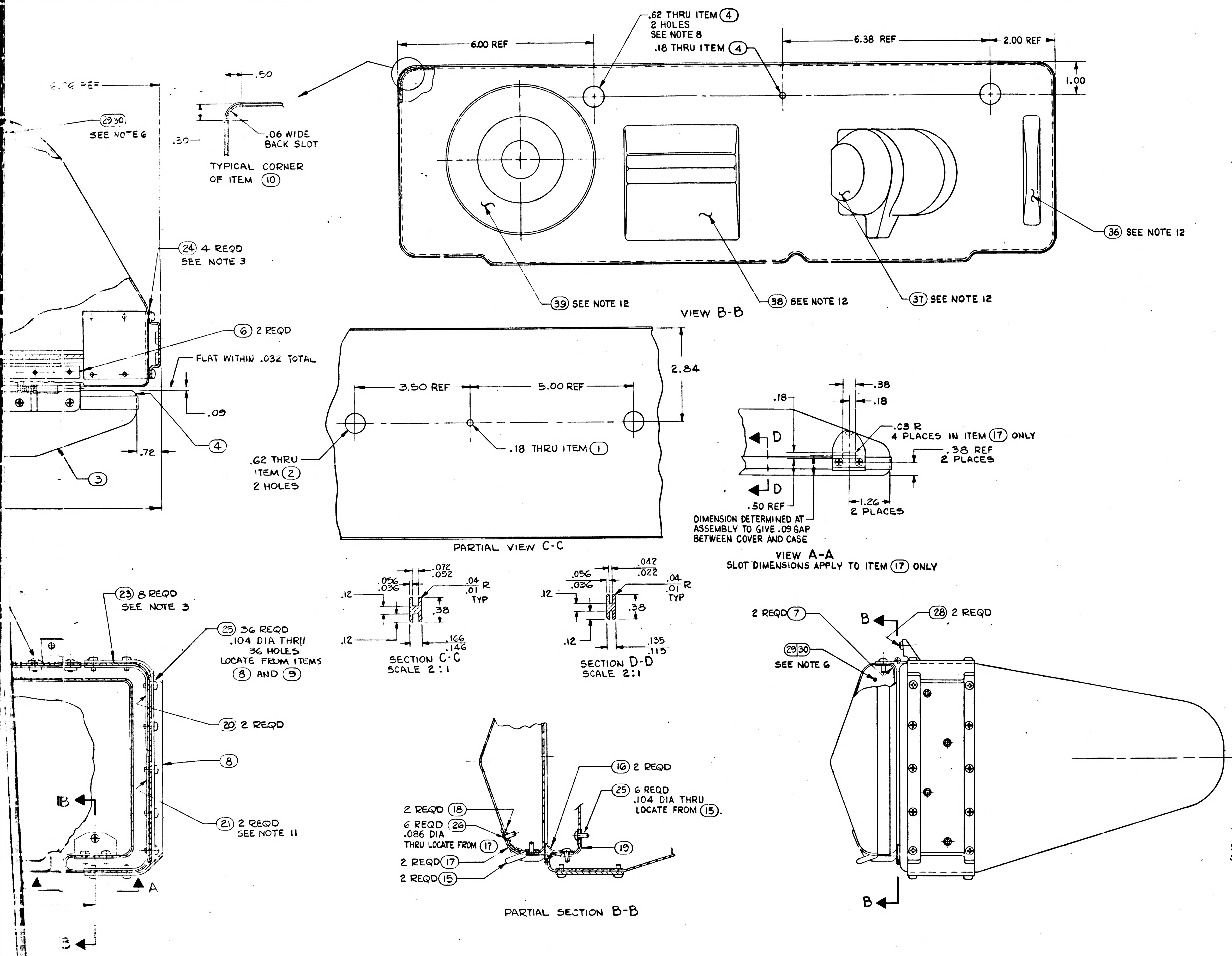
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
3. ITEMS ⑧ AND ⑨ TO BE SHIMMED TO MEET DIMENSIONS AND TO ALIGN THE INSERTS OF ITEMS ⑧ AND ⑨ TO EACH OTHER WITHIN .010 TRUE POSITION.
4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 36 INCHES AND OF ITEM ⑪ 48 INCHES. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
5. HOLES REQUIRED FOR ITEMS ㉕ AND ㉝ SHALL BE .143-.146 DIA DRILLED AT ASSEMBLY.
6. CASE AND COVER ASSEMBLIES SHALL BE FOAM FILLED USING ITEMS ㉙ AND ㉚ PER ND1002002 TYPE C SUCH THAT THE AVERAGE CURED FOAM DENSITY SHALL BE 3.5 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 150°F FOR FOUR HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60° F. PER HOUR.
7. FOAM FILL HOLES SHALL BE SEALED USING ITEMS ㉞ AND ㉟ PER ND1002004 TYPE II WITH .062 MIN THICKNESS FLUSH WITH SURFACE.
8. ITEM ⑬ TO BE INSTALLED INTO ITEM ⑫ SUCH THAT THE BALL EXTENDS BEYOND SURFACE OF ITEM ⑫ BY .020.
9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
10. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.


C
C
6.06
㉙㉚
SEE NOTE 6
.50
.50 R
.50
CORNER
①
㉔ 4 REQD
SEE NOTE 3
.420
C
C
⑥ 2 REQD
FLAT WITHIN .032 TOT
.26
2 PLACES
.094
②
④
.72
.62 THRU
ITEM ②
2 HOLES
2.06
2 PLACES
⑩
⑪
③
21.430
SEE NOTE 3
⑤ 2 REQD
㉝
6 REQD
.143-.146 DIA THRU
6 HOLES
LOCATE FROM ITEM ⑤
㉒ 2 REQD
6 REQD ㉗
㉓ 8 REQD
SEE NOTE 3
㉕ 36 REQD
.143-.146 DIA
36 HOLES
LOCATE FROM ITEMS
⑧ AND ⑨
A
⑨
⑳ 2 REQD
⑧
B
㉑ 2 REQD
SEE NOTE 11
A
A
1.06
17.50
A
B


2 REQD ⑭
⑫
⑬ 2 REQD
SEE NOTE 8
㉕ 2 REQD
.143-.146 DIA THRU
2 HOLES
LOCATE FROM ITEM ⑫

SECTION A-A

1021314	REV LTR	SH
	/	1



6.00 REF
.62 THRU ITEM (4)
2 HOLES
SEE NOTE 8
.18 THRU ITEM (4)
6.38 REF
2.00 REF
1.00
.50
.50
.06 WIDE
BACK SLOT
TYPICAL CORNER
OF ITEM (10)
(29)(30)
SEE NOTE 6
(24) 4 REQD
SEE NOTE 3
(36) SEE NOTE 12
(39) SEE NOTE 12
(38) SEE NOTE 12
(37) SEE NOTE 12
VIEW B-B
(6) 2 REQD
FLAT WITHIN .032 TOTAL
.09
(4)
.72
(3)
2.84
3.50 REF
5.00 REF
.62 THRU
ITEM (2)
2 HOLES
.18 THRU ITEM (1)
PARTIAL VIEW C-C
.18
.38
.18
.03 R
4 PLACES IN ITEM (17) ONLY
.38 REF
2 PLACES
D
D
.50 REF
1.26
2 PLACES
DIMENSION DETERMINED AT
ASSEMBLY TO GIVE .09 GAP
BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM (17) ONLY
(23) 8 REQD
SEE NOTE 3
(25) 36 REQD
.104 DIA THRU
36 HOLES
LOCATE FROM ITEMS
(8) AND (9)
(20) 2 REQD
(8)
(21) 2 REQD
SEE NOTE 11
B
A
B
.072
.052
.056
.036
.04 R
.01
TYP
.12
.38
.12
.166
.146
SECTION C-C
SCALE 2:1
.042
.022
.056
.036
.04 R
.01
TYP
.12
.38
.12
.135
.115
SECTION D-D
SCALE 2:1
2 REQD (7)
(28) 2 REQD
(29)(30)
SEE NOTE 6
B
B
(16) 2 REQD
(25) 6 REQD
.104 DIA THRU
LOCATE FROM (15).
2 REQD (18)
6 REQD (26)
.086 DIA
THRU LOCATE FROM (17)
2 REQD (17)
2 REQD (15)
(19)
PARTIAL SECTION B-B

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	40	AR	1010838	ADHESIVE-PRESSURE SENSITIVE
	39	1	1021314-006	PAD, PRESSURE
	38	1	1021314-005	PAD, PRESSURE
	37	1	1021314-004	PAD, PRESSURE
	36	1	1021314-003	PAD, PRESSURE
SEE NOTE 10	35	AR	1010686-	CATALYST (CLEAR)
	34	AR	1010657	EPOXY RESIN (CLEAR)
	33	~~6~~	~~1010868-2~~	~~RIVET BLIND, UNIVERSAL HEAD~~
	32	AR	1010661	EPOXY RESIN
	31	AR	1010679	ADHESIVE ACTIVATOR
	30	AR	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10	29	AR	1010863	POLYURETHENE RESIN
	28	2		BUMPER, RUBBER
SEE NOTE 10	27	6	1010618-14	SCREW, BUTTON HEAD
	26	6	MS 21207C4-6	SCREW, FLAT HD.-SELF THD
	25	50	MS 24622-16	SCREW, PAN HD
	24	4	1008871-002	SHIM-LAMINATED
	23	8	1008871-001	SHIM-LAMINATED
	22	2	1021311	STOP, COVER
	21	2	1021275	BRACKET, ANGLE-LOWER
	20	2	1021273	BRACKET, ANGLE-UPPER
	19	2	1021276	BRACKET, ANGLE, CATCH
	18	2	1021280	BRACKET, ANGLE, STRIKE
	17	2	1021312	STRIKE, CATCH
	16	2	1021264	SPRING, TENSION
	15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)
	14	2	1021279	BRACKET, ANGLE
SEE NOTE 10	13	2	1011288-1	PLUNGER, QUICK RELEASE
	12	1	1021277	HOLDER, FILTER
SEE NOTE 4	11	AR	1021314-002	SEAL, PLASTIC
SEE NOTE 4	10	AR	1021314-001	SEAL, PLASTIC
	9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
	8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
	7	2	1021313	BRACKET ANGLE, HINGE
	6	2	1021278	STRIP REINFORCING, HINGE (INSEP ASSY)
	5	2	1021265	HINGE, BUTT (INSEP. ASSY)
	4	1	1021310	LINER, COVER
	3	1	1021257	COVER, CASE
	2	1	1021309	LINER, CASE
	1	1	1021256	CASE, STOWAGE

LIST OF PARTS AND MATERIALS

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.P. / E.F.

NEXT ASSY	USED ON
1021255-021 1021255-011	1021255-021 1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± -
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Ingel DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE,
EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET 1 OF 1

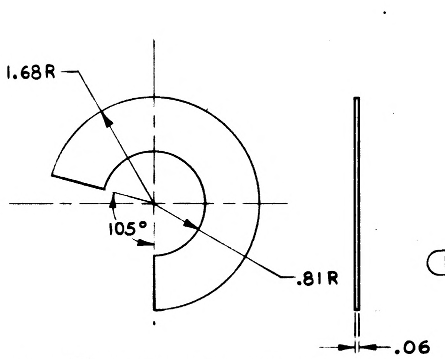
1021314

021314 | 1

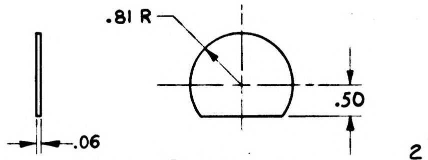
2/1021314

NOTES :

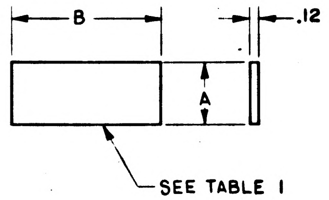
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
3. ITEMS ⑧ AND ⑨ TO BE SHIMMED TO MEET DIMENSIONS AND TO ALIGN THE INSERTS OF ITEMS ⑧ AND ⑨ TO EACH OTHER WITHIN .010 TRUE POSITION.
4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD 1008875 (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 36 INCHES AND OF ITEM ⑪ 48 INCHES. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
5. HOLES REQUIRED FOR ITEMS ㉕ AND ㉝ SHALL BE .143-.146 DIA DRILLED AT ASSEMBLY.
6. CASE AND COVER ASSEMBLIES SHALL BE FOAM FILLED USING ITEMS ㉙ AND ㉚ PER ND1002002 TYPE C SUCH THAT THE AVERAGE CURED FOAM DENSITY SHALL BE 3.0 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 140°F FOR SIX HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60° F. PER HOUR.
7. FOAM FILL HOLES SHALL BE SEALED USING ITEMS ㉞ AND ㉟ PER ND1002004 TYPE II WITH .062 MIN THICKNESS FLUSH WITH SURFACE.
8. ITEM ⑬ TO BE INSTALLED INTO ITEM ⑫ SUCH THAT THE BALL EXTENDS BEYOND SURFACE OF ITEM ⑫ BY .020.
9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
10. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.
12. ITEMS (36 37 38) AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS (36 37 38) AND ㊴ TO ITEM ④ WITH ADHESIVE 1010838, ITEM ㊵.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.


1.68R
105°
.81R
.06

ITEM ㊴ 1021314-006 SEE NOTE 12



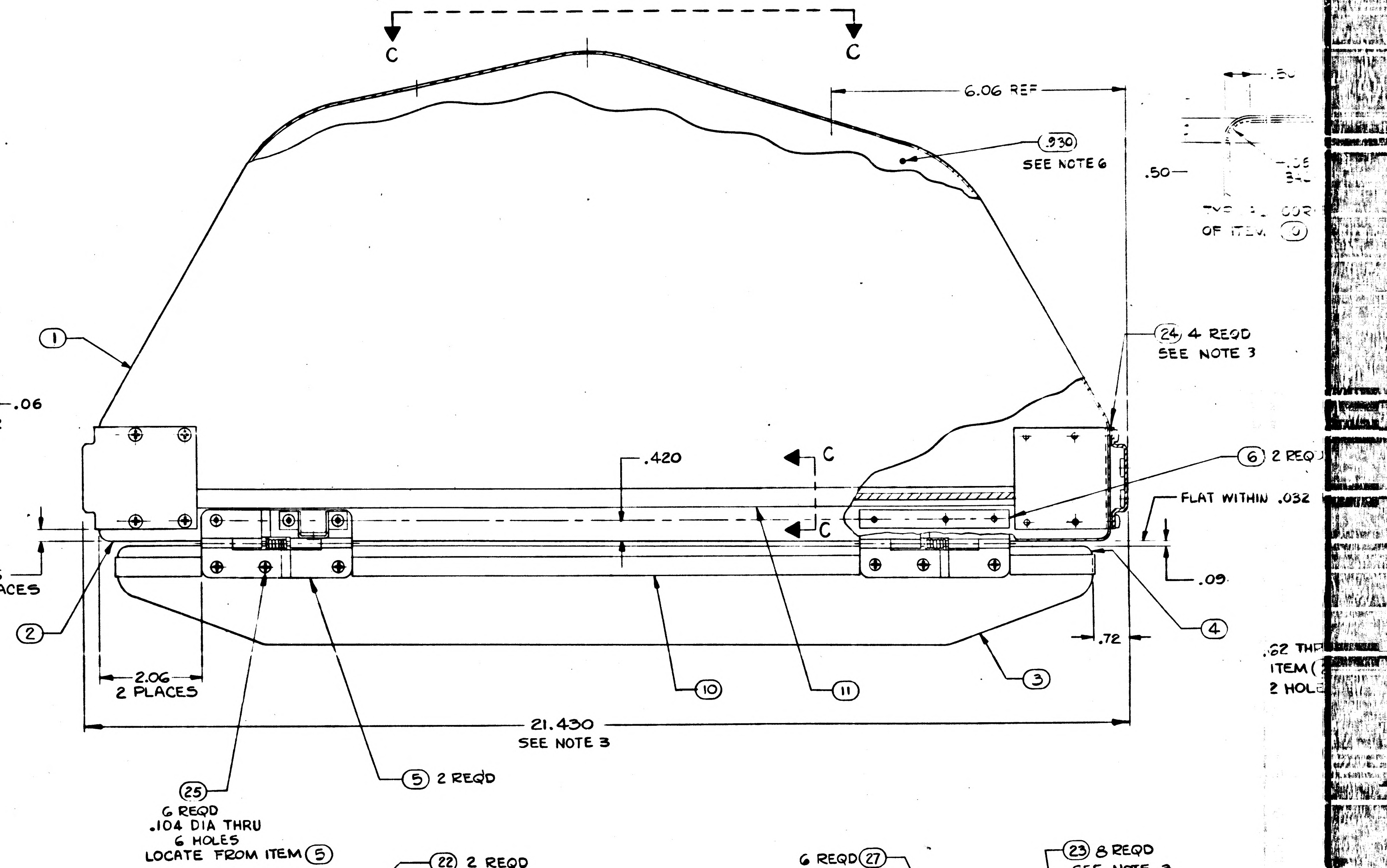
ITEM ㊲ 1021314-004 SEE NOTE 12

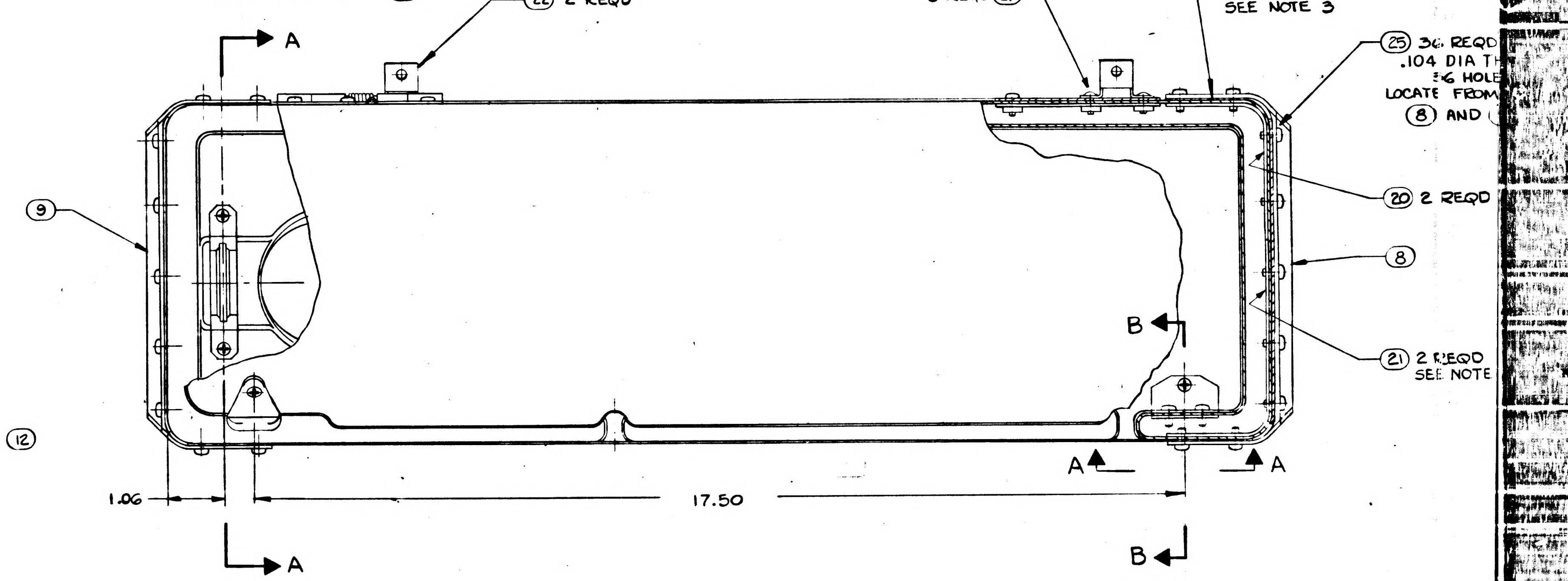


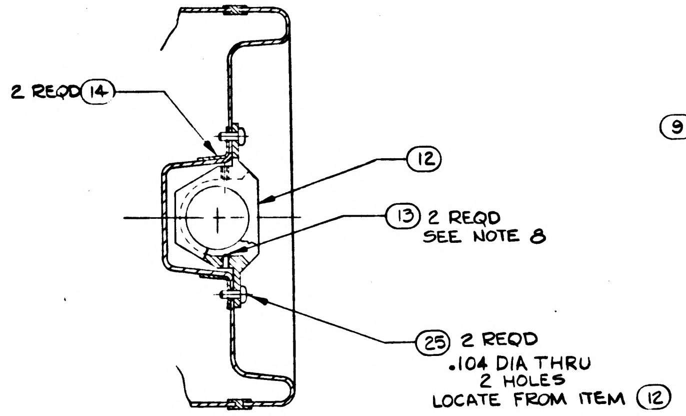
SEE TABLE I

TABLE I

ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12


C
C
6.06 REF
㉚ SEE NOTE 6
.50
.50
OF ITEM
①
㉔ 4 REQD SEE NOTE 3
.420
C
C
⑥ 2 REQ
FLAT WITHIN .032
.09
.26 2 PLACES
②
④
.72
.62 THR
ITEM (
2 HOLE
2.06 2 PLACES
⑩
⑪
③
21.430 SEE NOTE 3
⑤ 2 REQD
㉕ 6 REQD .104 DIA THRU 6 HOLES LOCATE FROM ITEM ⑤


㉒ 2 REQD
6 REQD ㉗
㉓ 8 REQD SEE NOTE 3
㉕ 36 REQD .104 DIA TH 36 HOLE LOCATE FROM ⑧ AND
⑳ 2 REQD
⑧
㉑ 2 REQD SEE NOTE
⑨
A
A
B
B
A
A
1.06
17.50

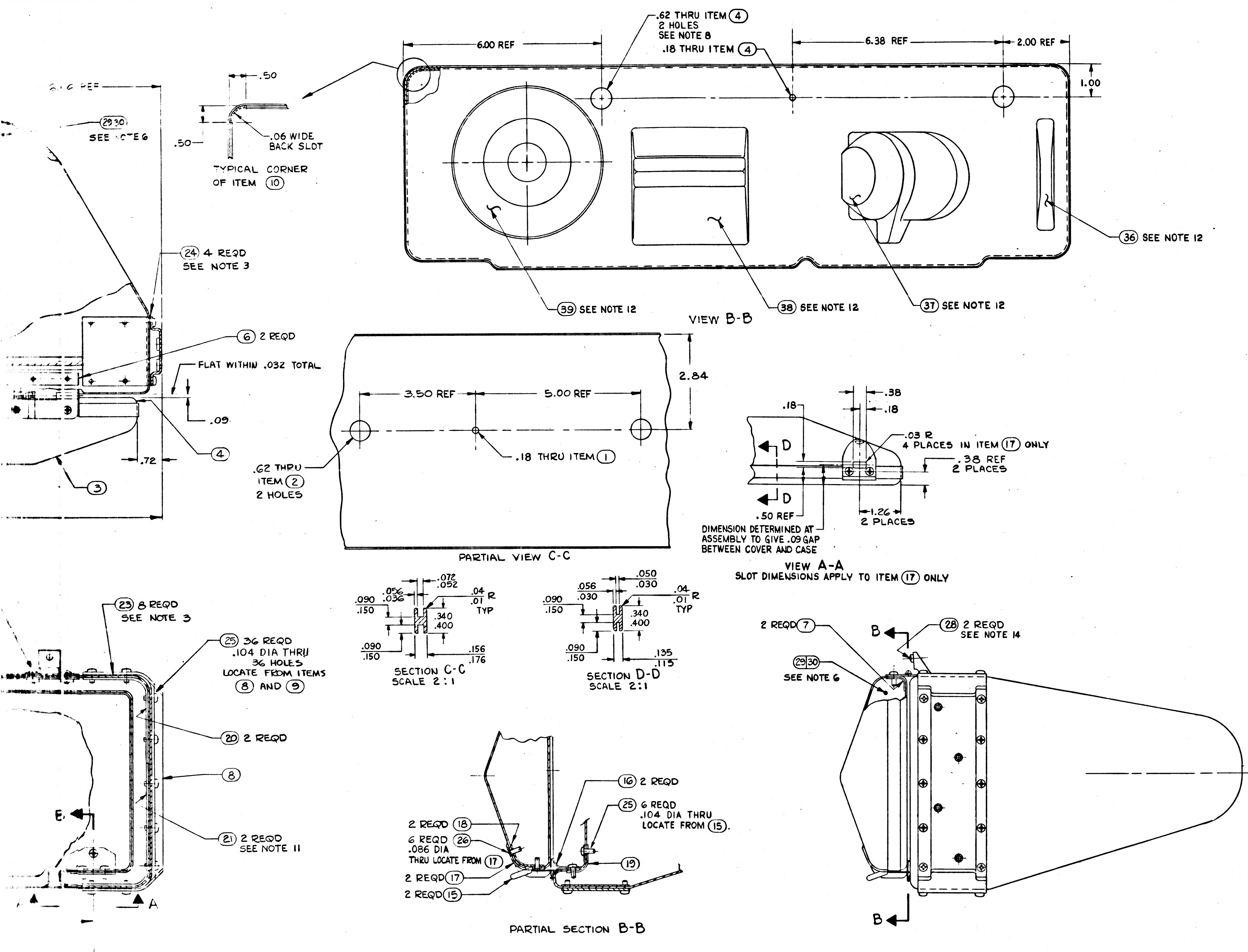

2 REQD ⑭
⑫
⑬ 2 REQD SEE NOTE 8
㉕ 2 REQD .104 DIA THRU 2 HOLES LOCATE FROM ITEM ⑫

SECTION A-A

1021314	REV B	SH 1

1/1021314

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.P. E.F.
C		REV'SED PER TDRR 28 44		28 APR -66	3.



6.00 REF
.62 THRU ITEM ④
2 HOLES
SEE NOTE 8
.18 THRU ITEM ④
6.38 REF
2.00 REF
1.00
.50
.50
.06 WIDE
BACK SLOT
TYPICAL CORNER
OF ITEM ⑩
(29)(30)
SEE NOTE 6
㊴ SEE NOTE 12
㊳ SEE NOTE 12
㊲ SEE NOTE 12
㊱ SEE NOTE 12
VIEW B-B
㉔ 4 REQD
SEE NOTE 3
⑥ 2 REQD
FLAT WITHIN .032 TOTAL
.09
④
.72
③
2.84
3.50 REF
5.00 REF
.62 THRU
ITEM ②
2 HOLES
.18 THRU ITEM ①
PARTIAL VIEW C-C
.18
.38
.18
.03 R
4 PLACES IN ITEM ⑰ ONLY
.38 REF
2 PLACES
D
D
.50 REF
1.26
2 PLACES
DIMENSION DETERMINED AT
ASSEMBLY TO GIVE .09 GAP
BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM ⑰ ONLY
.072
.052
.056
.036
.090
.150
.04
.01 R
TYP
.340
.400
.090
.150
.156
.176
SECTION C-C
SCALE 2:1
.050
.030
.056
.030
.090
.150
.04
.01 R
TYP
.340
.400
.090
.150
.135
.115
SECTION D-D
SCALE 2:1
㉓ 8 REQD
SEE NOTE 3
㉕ 36 REQD
.104 DIA THRU
36 HOLES
LOCATE FROM ITEMS
⑧ AND ⑨
⑳ 2 REQD
⑧
㉑ 2 REQD
SEE NOTE 11
E
A
A
E
⑯ 2 REQD
㉕ 6 REQD
.104 DIA THRU
LOCATE FROM ⑮.
2 REQD ⑱
6 REQD ㉖
.086 DIA
THRU LOCATE FROM ⑰
2 REQD ⑰
2 REQD ⑮
⑲
PARTIAL SECTION B-B
2 REQD ⑦
㉘ 2 REQD
SEE NOTE 14
(29)(30)
SEE NOTE 6
B
B

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	
40	AR	1010838	ADHESIVE-PRESSURE SENSITIVE	
39	1	1021314-006	PAD, PRESSURE	
38	1	1021314-005	PAD, PRESSURE	
37	1	1021314-004	PAD, PRESSURE	
36	1	1021314-003	PAD, PRESSURE	
35	~~AR~~	~~1010686~~	~~CATALYST (CLEAR)~~	~~SEE NOTE 10~~
34	~~AR~~	~~1010657~~	~~EPOXY RESIN (CLEAR)~~	
33	~~6~~	~~1010868-2~~	~~RIVET BLIND, UNIVERSAL HEAD~~	
32	AR	1010661	EPOXY RESIN	SEE NOTE 10
31	AR	1010679	ADHESIVE ACTIVATOR	
30	AR	1010864	POLYURETHENE PREPOLYMER	
29	AR	1010863	POLYURETHENE RESIN	SEE NOTE 10
28	2		BUMPER, RUBBER	
27	6	1010618-14	SCREW, BUTTON HEAD	SEE NOTE 10
26	6	MS 21207C4-6	SCREW, FLAT HD. - SELF THD	
25	50	MS 24622-16	SCREW, PAN HD	
24	4	1008871-002	SHIM-LAMINATED	
23	8	1008871-001	SHIM-LAMINATED	
22	2	1021311	STOP, COVER	
21	2	1021275	BRACKET, ANGLE-LOWER	
20	2	1021273	BRACKET, ANGLE-UPPER	
19	2	1021276	BRACKET, ANGLE, CATCH	
18	2	1021280	BRACKET, ANGLE, STRIKE	
17	2	1021312	STRIKE, CATCH	
16	2	1021264	SPRING, TENSION	
15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)	
14	2	1021279	BRACKET, ANGLE	
13	2	1011288-1	PLUNGER, QUICK RELEASE	SEE NOTE 10
12	1	1021277	HOLDER, FILTER	
11	AR	1021314-002	SEAL, PLASTIC	SEE NOTE 4
10	AR	1021314-001	SEAL, PLASTIC	SEE NOTE 4
9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)	
8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)	
7	2	1021313	BRACKET, ANGLE, HINGE	
6	2	1021278	STRIP REINFORCING, HINGE (INSEP ASSY)	
5	2	1021265	HINGE, BUTT (INSEP. ASSY)	
4	1	1021310	LINER, COVER	
3	1	1021257	COVER, CASE	
2	1	1021309	LINER, CASE	
1	1	1021256	CASE, STOWAGE	

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021255-021	1021253-021
1021255-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Ingle DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE,
EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET 1 OF 1

1021314 C 1

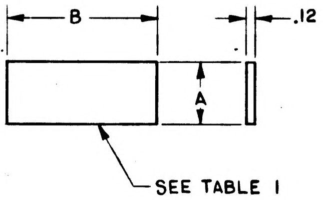
2/1021314

NOTES :

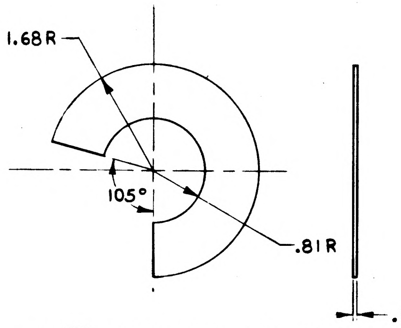
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
3. ITEMS ⑧ AND ⑨ TO BE SHIMMED TO MEET DIMENSIONS AND TO ALIGN THE INSERTS OF ITEMS ⑧ AND ⑨ TO EACH OTHER WITHIN .010 TRUE POSITION.
4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD 1008875 (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 5.00 REF AND OF ITEM ⑪ 40.00 REF. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
5. HOLES REQUIRED FOR ITEMS ㉕ AND ㉝ SHALL BE .143-.146 DIA DRILLED AT ASSEMBLY.
6. CASE AND COVER ASSEMBLIES SHALL BE FOAM FILLED USING ITEMS ㉙ AND ㉚ PER ND1002002 TYPE C SUCH THAT THE AVERAGE CURED FOAM DENSITY SHALL BE 3.0 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 140°F FOR SIX HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60° F PER HOUR
7. FOAM FILL HOLES SHALL BE SEALED USING A THIXOTROPIC ADHESIVE PER MMM-A-132 TYPE I, CLASS 3 (EPON 934) WITH .062 MIN. THICKNESS FLUSH WITH SURFACE.
8. ITEM ⑬ TO BE INSTALLED INTO ITEM ⑫ SUCH THAT THE BALL EXTENDS BEYOND SURFACE OF ITEM ⑫ BY .020.
9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
10. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.
12. ITEMS ㊱㊲㊳ AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS ㊱㊲㊳ AND ㊴ TO ITEM ④ WITH ADHESIVE 1010838, ITEM ㊵.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.
14. ITEM ㉘ TO BE POSITIONED TO LIMIT COVER TRAVEL TO 85° MAX.
15. PIN HOLES .032 MAX. DIA ARE ALLOWABLE ALONG SEAMS OF COVER TO FACILITATE FOAMING PROCESS. TWO HOLES .18 DIA ARE ALLOWABLE ON ENDS OF CASE TO FACILITATE FOAMING OF CASE. ALL HOLES TO BE SEALED WITH ADHESIVE PER NOTE 7.

TABLE I

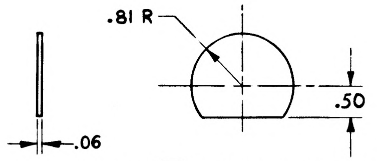
ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12



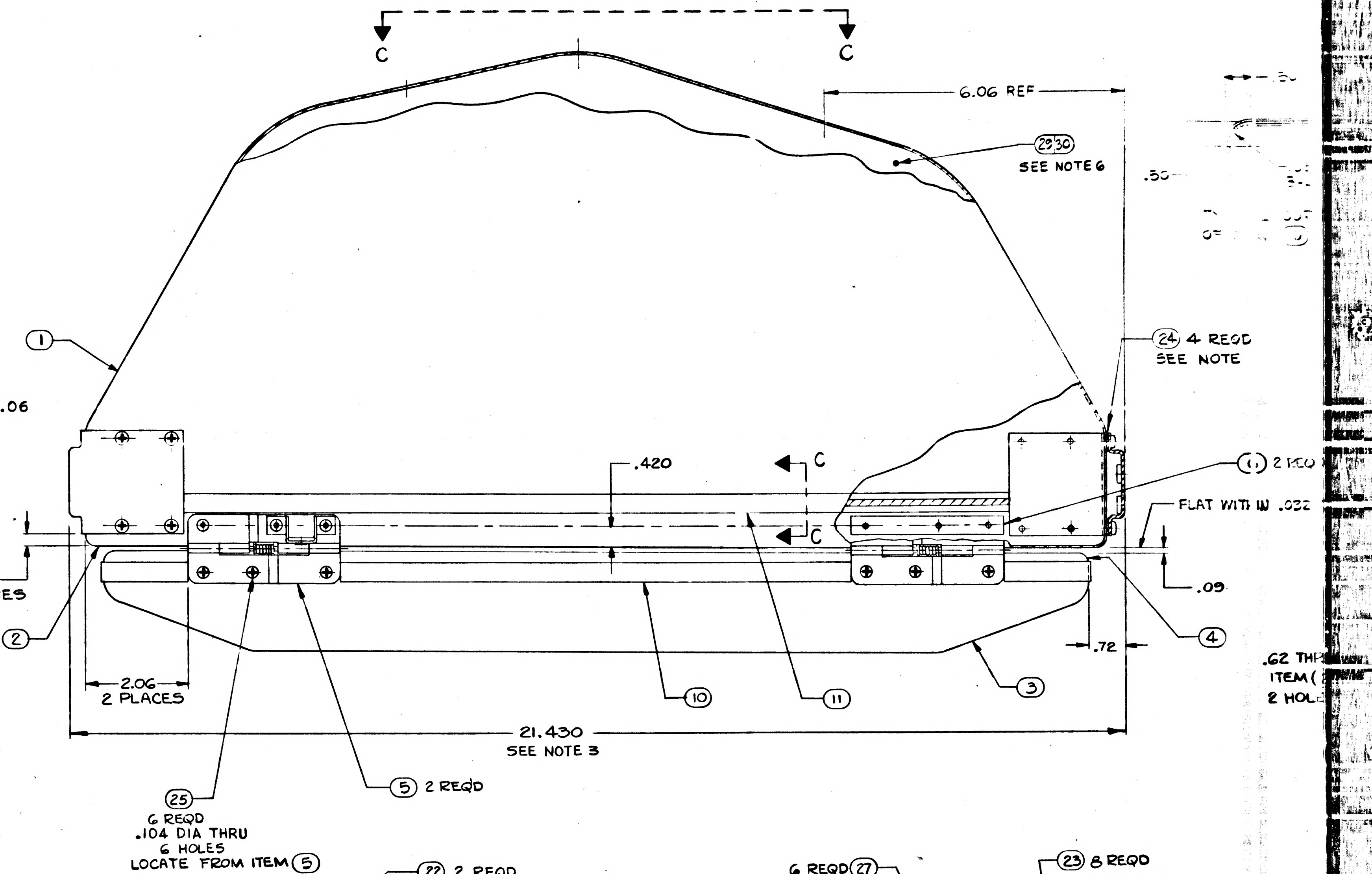
SEE TABLE I

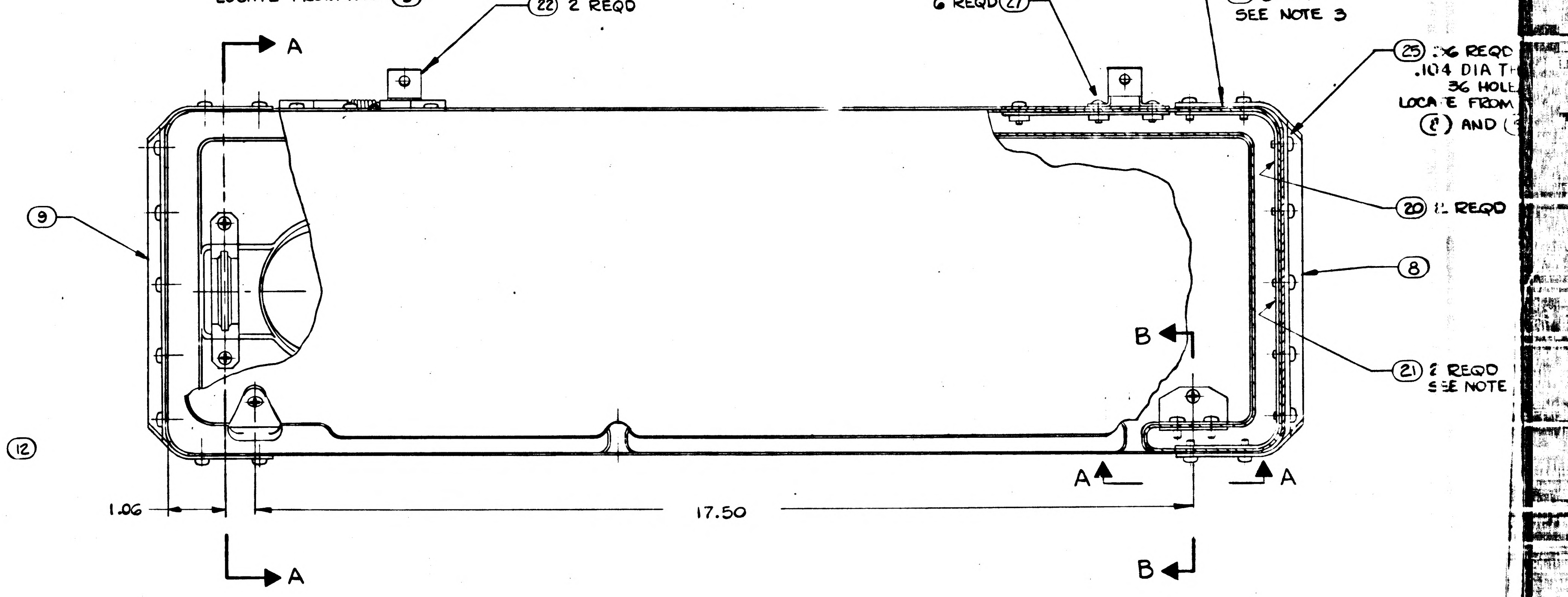

1.68 R
105°
.81 R
.06

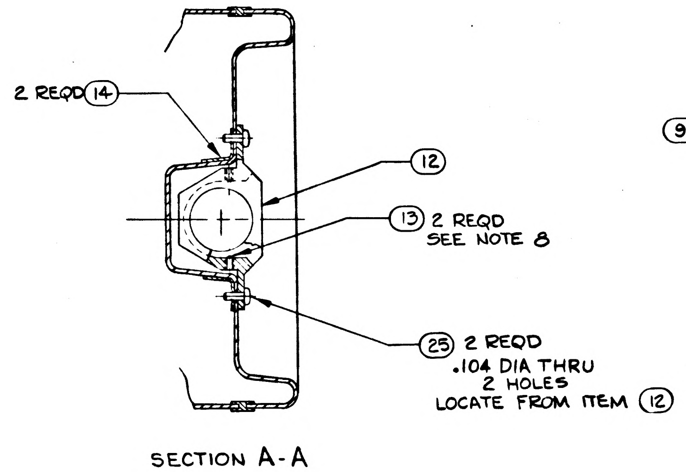
ITEM ㊴ 1021314-006 SEE NOTE 12



ITEM ㊲ 1021314-004 SEE NOTE 12


C
C
6.06 REF
㉙㉚ SEE NOTE 6
①
㉔ 4 REQD SEE NOTE
.420
C
C
⑥ 2 REQ
FLAT WITHIN .032
.26 2 PLACES
.09
②
④
.72
2.06 2 PLACES
⑩
⑪
③
21.430 SEE NOTE 3
⑤ 2 REQD
㉕ 6 REQD .104 DIA THRU 6 HOLES LOCATE FROM ITEM ⑤
.50
.62 THR
ITEM (
2 HOLE

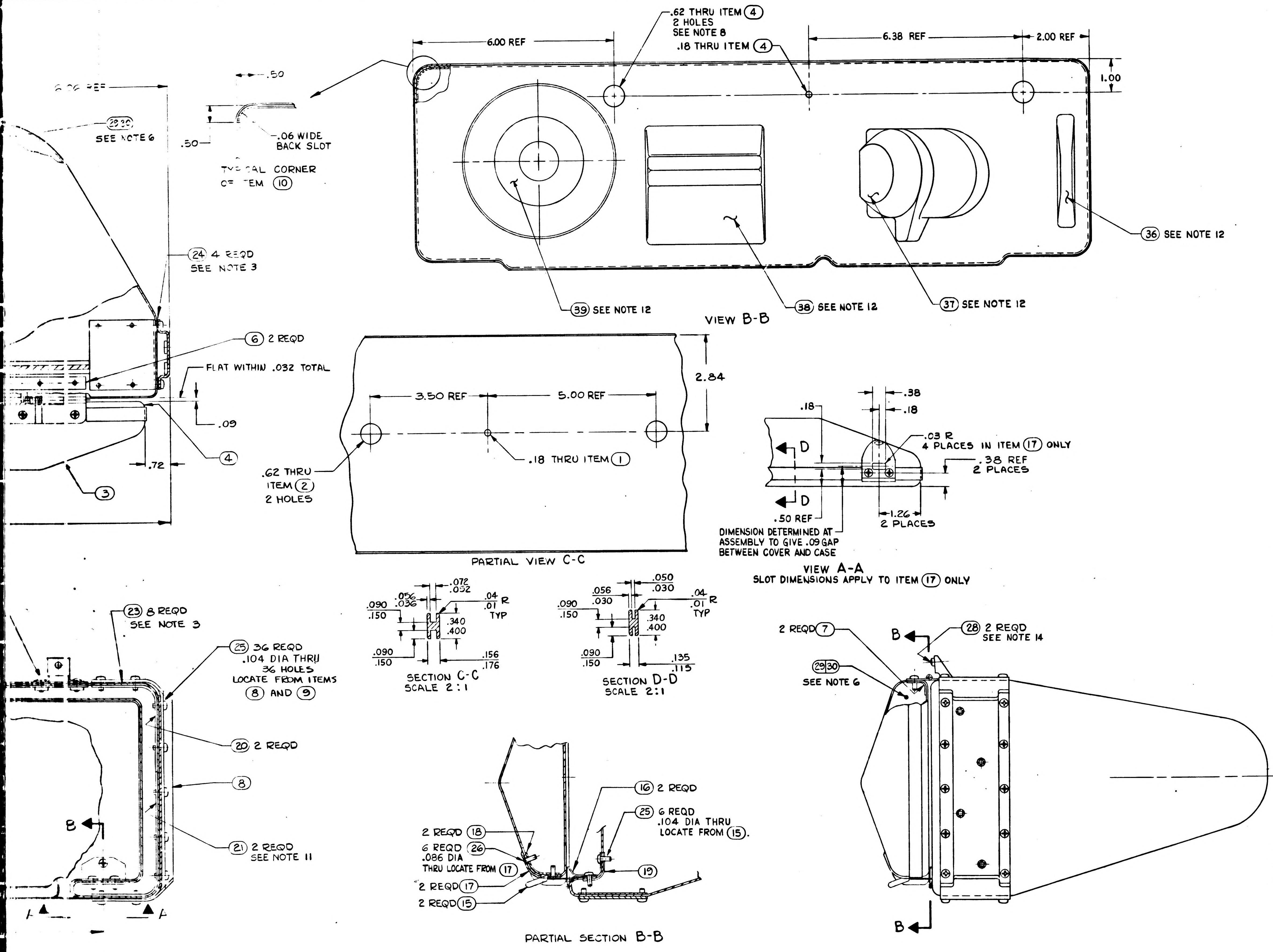

A
㉒ 2 REQD
6 REQD ㉗
㉓ 8 REQD SEE NOTE 3
㉕ 36 REQD .104 DIA TH 36 HOLE LOCATE FROM ⑧ AND
⑨
⑳ 2 REQD
⑧
B
㉑ 2 REQD SEE NOTE
A
A
1.06
17.50
A
B


2 REQD ⑭
⑫
⑬ 2 REQD SEE NOTE 8
㉕ 2 REQD .104 DIA THRU 2 HOLES LOCATE FROM ITEM ⑫

SECTION A-A

1021314 C 1

1/1021314


6.00 REF
.62 THRU ITEM (4)
2 HOLES
SEE NOTE 8
.18 THRU ITEM (4)
6.38 REF
2.00 REF
1.00
(36) SEE NOTE 12
(39) SEE NOTE 12
(38) SEE NOTE 12
(37) SEE NOTE 12
VIEW B-B
6.06 REF
.50
.30
.06 WIDE
BACK SLOT
(29)(30)
SEE NOTE 6
TYPICAL CORNER
OF ITEM (10)
(24) 4 REQD
SEE NOTE 3
(6) 2 REQD
FLAT WITHIN .032 TOTAL
.09
(4)
.72
(3)
3.50 REF
5.00 REF
2.84
.62 THRU
ITEM (2)
2 HOLES
.18 THRU ITEM (1)
PARTIAL VIEW C-C
.18
.38
.18
.03 R
4 PLACES IN ITEM (17) ONLY
.38 REF
2 PLACES
D
D
.50 REF
1.26
2 PLACES
DIMENSION DETERMINED AT
ASSEMBLY TO GIVE .09 GAP
BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM (17) ONLY
.090
.150
.056
.036
.072
.052
.04
.01 R
TYP
.340
.400
.090
.150
.156
.176
SECTION C-C
SCALE 2:1
.090
.150
.056
.030
.050
.030
.04
.01 R
TYP
.340
.400
.090
.150
.135
.115
SECTION D-D
SCALE 2:1
(23) 8 REQD
SEE NOTE 3
(25) 36 REQD
.104 DIA THRU
36 HOLES
LOCATE FROM ITEMS
(8) AND (9)
(20) 2 REQD
(8)
B
(21) 2 REQD
SEE NOTE 11
A
A
B
(16) 2 REQD
(25) 6 REQD
.104 DIA THRU
LOCATE FROM (15).
2 REQD (18)
6 REQD (26)
.086 DIA
THRU LOCATE FROM (17)
(19)
2 REQD (17)
2 REQD (15)
PARTIAL SECTION B-B
2 REQD (7)
(28) 2 REQD
SEE NOTE 14
B
(29)(30)
SEE NOTE 6
B

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.P. E.F.
C		REVISED PER TDRR 28144		28-APR -66	B
D		REVISED PER TDRR 28883		20-NOV-66	B

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 10	41	AR	1010718	PRIMER, ADHESIVE
	40	AR	MIL-A-25457	ADHESIVE-PRESSURE SENSITIVE
	39	1	1021314-006	PAD, PRESSURE
	38	1	1021314-005	PAD, PRESSURE
	37	1	1021314-004	PAD, PRESSURE
	36	1	1021314-003	PAD, PRESSURE
~~SEE NOTE 10~~	35	~~AR~~	~~1010686~~	~~CATALYST (CLEAR)~~
	34	~~AR~~	~~1010657~~	~~EPOXY RESIN (CLEAR)~~
	33	~~6~~	~~1010868-2~~	~~RIVET BLIND, UNIVERSAL HEAD~~
SEE NOTE 10	32	AR	1010661	EPOXY RESIN
	31	AR	1010679	ADHESIVE ACTIVATOR
	30	AR	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10	29	AR	1010863	POLYURETHENE RESIN
	28	2	1008872-001	BUMPER, RUBBER
SEE NOTE 10	27	6	1010618-14	SCREW, BUTTON HEAD
	26	6	MS 21207C4-6	SCREW, FLAT HD.-SELF THD
	25	50	MS 24622-16	SCREW, PAN HD
	24	4	1008871-002	SHIM-LAMINATED
	23	8	1008871-001	SHIM-LAMINATED
	22	2	1021311	STOP, COVER
	21	2	1021275	BRACKET, ANGLE-LOWER
	20	2	1021273	BRACKET, ANGLE-UPPER
	19	2	1021276	BRACKET, ANGLE. CATCH
	18	2	1021280	BRACKET, ANGLE, STRIKE
	17	2	1021312	STRIKE, CATCH
	16	2	1021264	SPRING, TENSION
	15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)
	14	2	1021279	BRACKET, ANGLE
SEE NOTE 10	13	2	1011288-1	PLUNGER, QUICK RELEASE
	12	1	1021277	HOLDER, FILTER
SEE NOTE 4	11	AR	1021314-002	SEAL, PLASTIC
SEE NOTE 4	10	AR	1021314-001	SEAL, PLASTIC
	9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
	8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
	7	2	1021313	BRACKET, ANGLE, HINGE
	6	2	1021278	STRIP, REINFORCING, HINGE (INSEP ASSY)
	5	2	1021265	HINGE BUTT (INSEP. ASSY)
	4	1	1021310	LINER, COVER
	3	1	1021257	COVER CASE
	2	1	1021309	LINER, CASE
	1	1	1021256	CASE, STOWAGE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021255-021	1021255-021
1021255-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Ozgul DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE,
EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

SIZE J2 | CODE IDENT NO. 80230 | 1021314
SCALE FULL | SHEET 1 OF 1

1021314

102 314 | - | 1

27 1021314

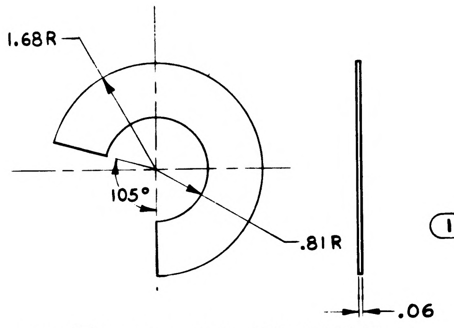
NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
3. ITEMS ⑧ AND ⑨ TO BE SHIMMED TO MEET DIMENSIONS AND TO ALIGN THE INSERTS OF ITEMS ⑧ AND ⑨ TO EACH OTHER WITHIN .010 TRUE POSITION.
4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD 1008875 (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 51.00 REF AND OF ITEM ⑪ 40.00 REF. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
5. HOLES REQUIRED FOR ITEMS ㉕ AND ㉝ SHALL BE .143-.146 DIA DRILLED AT ASSEMBLY.
6. CASE AND COVER ASSEMBLIES SHALL BE FOAM FILLED USING ITEMS ㉙ AND ㉚ PER ND 1002002 TYPE C SUCH THAT THE AVERAGE CURED FOAM DENSITY SHALL BE 3.0 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 140°F FOR SIX HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60° F PER HOUR
7. FOAM FILL HOLES SHALL BE SEALED USING A THIXOTROPIC ADHESIVE PER MMM-A-132 TYPE I, CLASS 3 (EPON 934) WITH .062 MIN. THICKNESS FLUSH WITH SURFACE.
8. ITEM ⑬ TO BE INSTALLED INTO ITEM ⑫ SUCH THAT THE BALL EXTENDS BEYOND SURFACE OF ITEM ⑫ BY .020.
9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
10. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.
12. ITEMS ㊱㊲㊳ AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS ㊱㊲㊳ AND ㊴ TO ITEM ④ WITH ADHESIVE ITEMS (40) AND (41) PER ND 1002151 WITH ROOM TEMPERATURE CURE.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.
14. ITEM ㉘ TO BE POSITIONED TO LIMIT COVER TRAVEL TO 85° MAX.
15. PIN HOLES .032 MAX. DIA ARE ALLOWABLE ALONG SEAMS OF COVER TO FACILITATE FOAMING PROCESS. TWO HOLES .18 DIA ARE ALLOWABLE ON ENDS OF CASE TO FACILITATE FOAMING OF CASE. ALL HOLES TO BE SEALED WITH ADHESIVE PER NOTE 7.

TABLE I

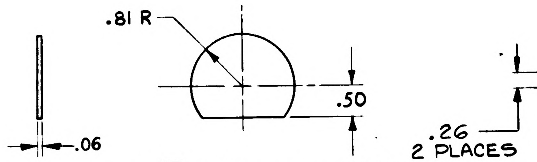
ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12

16. LOCATE SPRING TENSION ITEM ⑯ TO INSURE .020-.030 SPRING DEFLECTION WHEN COVER IS IN CLOSED POSITION.

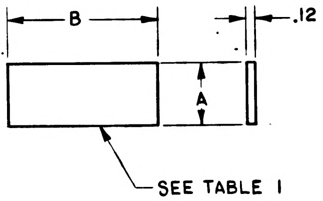


1.68R
105°
.81 R
.06

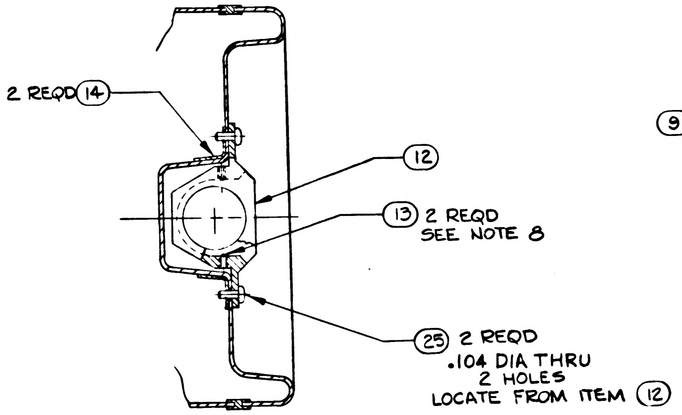
ITEM ㊴ 1021314-006 SEE NOTE 12



ITEM ㊲ 1021314-004 SEE NOTE 12

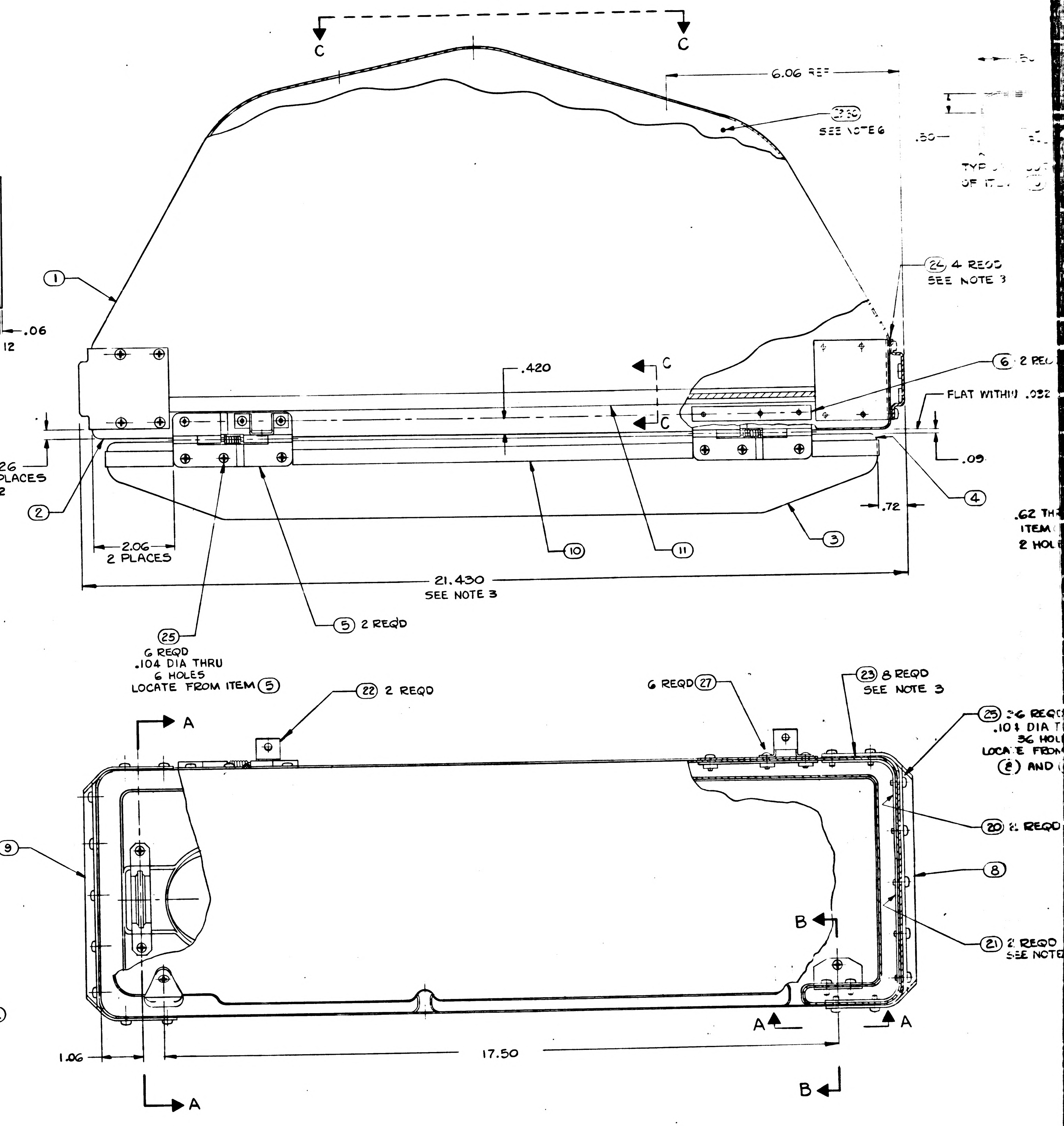


B
.12
A
SEE TABLE I



2 REQD ⑭
⑫
⑬ 2 REQD
SEE NOTE 8
㉕ 2 REQD
.104 DIA THRU
2 HOLES
LOCATE FROM ITEM ⑫

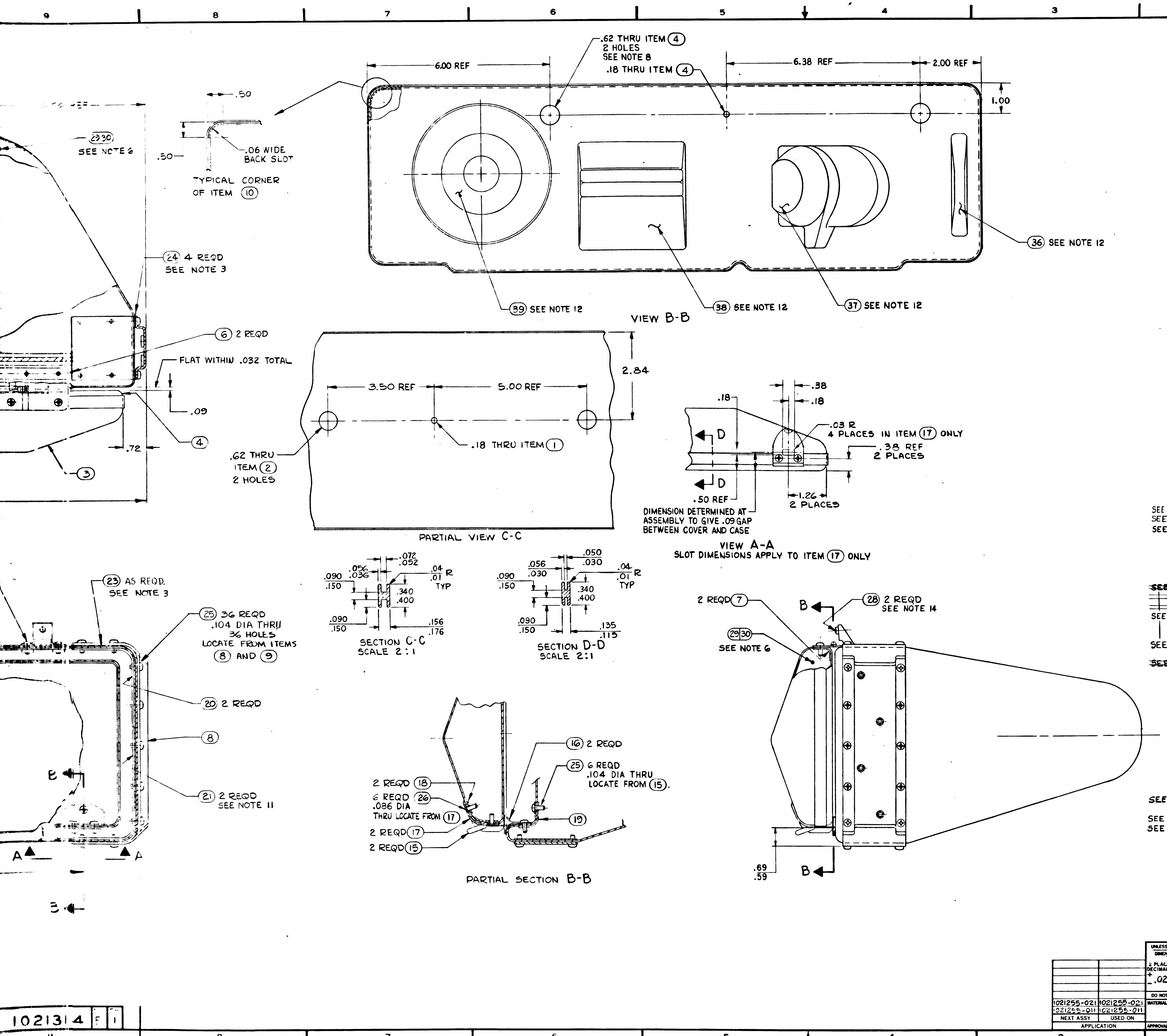
SECTION A-A



C
C
6.06 REF
㉙㉚
SEE NOTE 6
.50
TYP
OF ITEM
㉔ 4 REQD
SEE NOTE 3
①
.420
C
C
⑥ 2 REQ
FLAT WITHIN .032
.26
2 PLACES
.09
④
.72
②
③
⑩
⑪
2.06
2 PLACES
21.430
SEE NOTE 3
⑤ 2 REQD
.62 TH
ITEM
2 HOL
㉕
6 REQD
.104 DIA THRU
6 HOLES
LOCATE FROM ITEM ⑤
A
㉒ 2 REQD
6 REQD ㉗
㉓ 8 REQD
SEE NOTE 3
㉕ 36 REQD
.104 DIA T
36 HOL
LOCATE FROM
⑧ AND
⑨
⑳ 2 REQD
⑧
B
㉑ 2 REQD
SEE NOTE
A
A
1.06
17.50
B
A

1021314	REV D	SH 1

1/1021314


.62 THRU ITEM (4)
2 HOLES
SEE NOTE 8
.18 THRU ITEM (4)
6.00 REF
6.38 REF
2.00 REF
1.00
(36) SEE NOTE 12
(39) SEE NOTE 12
(38) SEE NOTE 12
(37) SEE NOTE 12
VIEW B-B
.50
.50
.06 WIDE BACK SLOT
TYPICAL CORNER OF ITEM (10)
(29)(30) SEE NOTE 6
(24) 4 REQD SEE NOTE 3
(6) 2 REQD
FLAT WITHIN .032 TOTAL
.09
.72
(4)
(3)
2.84
3.50 REF
5.00 REF
.62 THRU ITEM (2) 2 HOLES
.18 THRU ITEM (1)
PARTIAL VIEW C-C
.18
.38
.18
.03 R 4 PLACES IN ITEM (17) ONLY
.38 REF 2 PLACES
D
D
.50 REF
1.26 2 PLACES
DIMENSION DETERMINED AT ASSEMBLY TO GIVE .09 GAP BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM (17) ONLY
.090 .150
.056 .036
.072 .052
.04 .01 R TYP
.340 .400
.090 .150
.156 .176
SECTION C-C SCALE 2:1
.056 .030
.050 .030
.090 .150
.04 .01 R TYP
.340 .400
.090 .150
.135 .115
SECTION D-D SCALE 2:1
(23) AS REQD. SEE NOTE 3
(25) 36 REQD .104 DIA THRU 36 HOLES LOCATE FROM ITEMS (8) AND (9)
(20) 2 REQD
(8)
(21) 2 REQD SEE NOTE 11
E
B
A
A
E
(16) 2 REQD
(25) 6 REQD .104 DIA THRU LOCATE FROM (15).
2 REQD (18)
6 REQD (26) .086 DIA THRU LOCATE FROM (17)
2 REQD (17)
2 REQD (15)
(19)
PARTIAL SECTION B-B
2 REQD (7)
(28) 2 REQD SEE NOTE 14
(29)(30) SEE NOTE 6
B
B
.69 .59

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.F. E.H.
C		REVISED PER TDRR 28144		28-APR-66	B.
D		REVISED PER TDRR 28883		20-MAY-66	B.
E		REVISED PER TDRR 29366		9 JUN 66	R.W. CP

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 17	43	AR	1021314-007	SHIM-HINGE
SEE NOTE 10	42	6	1010618-15	SCREW, BUTTON HD.
SEE NOTE 10	41	AR	1010718	PRIMER, ADHESIVE
	40	AR	MIL-A-25457	ADHESIVE-PRESSURE SENSITIVE
	39	1	1021314-006	PAD, PRESSURE
	38	1	1021314-005	PAD, PRESSURE
	37	1	1021314-004	PAD, PRESSURE
	36	1	1021314-003	PAD, PRESSURE
~~SEE NOTE 10~~	~~35~~	~~AR~~	~~1010686~~	~~CATALYST (CLEAR)~~
	~~34~~	~~AR~~	~~1010657~~	~~EPOXY RESIN (CLEAR)~~
	~~33~~	~~6~~	~~1010868-2~~	~~RIVET BLIND, UNIVERSAL HEAD~~
SEE NOTE 10	32	AR	1010661	EPOXY RESIN
	31	AR	1010679	ADHESIVE ACTIVATOR
	30	AR	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10	29	AR	1010863	POLYURETHENE RESIN
	28	2	1008872-001	BUMPER, RUBBER
~~SEE NOTE 10~~	~~27~~	~~6~~	~~1010618-14~~	~~SCREW, BUTTON HEAD~~
	26	6	MS 21207C4-6	SCREW, FLAT HD.-SELF THD
	25	50	MS 24622-16	SCREW, PAN HD
	24	4	1008871-002	SHIM-LAMINATED
	23	AR	1008871-001	SHIM-LAMINATED
	22	2	1021311	STOP, COVER
	21	2	1021275	BRACKET, ANGLE-LOWER
	20	2	1021273	BRACKET, ANGLE-UPPER
	19	2	1021276	BRACKET, ANGLE, CATCH
	18	2	1021280	BRACKET, ANGLE, STRIKE
	17	2	1021312	STRIKE, CATCH
	16	2	1021264	SPRING, TENSION
	15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)
	14	2	1021279	BRACKET, ANGLE
SEE NOTE 10	13	2	1011288-1	PLUNGER, QUICK RELEASE
	12	1	1021277	HOLDER, FILTER
SEE NOTE 4	11	AR	1021314-002	SEAL, PLASTIC
SEE NOTE 4	10	AR	1021314-001	SEAL, PLASTIC
	9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
	8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
	7	2	1021313	BRACKET, ANGLE, HINGE
	6	2	1021278	STRIP, REINFORCING, HINGE (INSEP ASSY)
	5	2	1021265	HINGE, BUTT (INSEP. ASSY)
	4	1	1021310	LINER, COVER
	3	1	1021257	COVER, CASE
	2	1	1021309	LINER, CASE
	1	1	1021256	CASE, STOWAGE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021255-021	1021255-021
1021255-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Tegel DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE,
EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET 1 OF 1

1021314 F 1

27 1021314

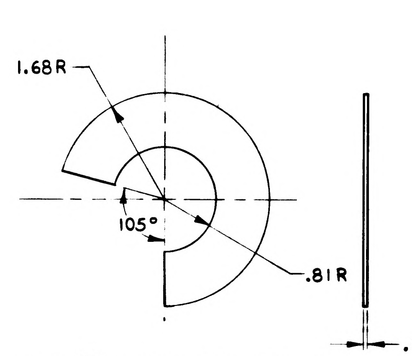
NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
3. ITEMS ⑧ AND ⑨ TO BE SHIMMED TO MEET DIMENSIONS AND TO ALIGN THE INSERTS OF ITEMS ⑧ AND ⑨ TO EACH OTHER WITHIN .010 TRUE POSITION.
4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD 1008875 (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 51.00 REF AND OF ITEM ⑪ 40.00 REF. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
5. HOLES REQUIRED FOR ITEMS ㉕ AND ㉝ SHALL BE .143-.146 DIA DRILLED AT ASSEMBLY.
6. CASE AND COVER ASSEMBLIES SHALL BE FOAM FILLED USING ITEMS ㉙ AND ㉚ PER ND1002002 TYPE C SUCH THAT THE AVERAGE CURED FOAM DENSITY SHALL BE 3.0 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 140°F FOR SIX HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60° F. PER HOUR
7. FOAM FILL HOLES SHALL BE SEALED USING A THIXOTROPIC ADHESIVE PER MMM-A-132 TYPE I, CLASS 3 (EPON 934) WITH .062 MIN. THICKNESS FLUSH WITH SURFACE.
8. ITEM ⑬ TO BE INSTALLED INTO ITEM ⑫ SUCH THAT THE BALL EXTENDS BEYOND SURFACE OF ITEM ⑫ BY .020.
9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
10. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.
12. ITEMS ㊱㊲㊳ AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS ㊱㊲㊳ AND ㊴ TO ITEM ④ WITH ADHESIVE ITEMS ㊵ AND ㊶ PER ND1002151 WITH ROOM TEMPERATURE CURE.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.
14. ITEM ㉘ TO BE POSITIONED TO LIMIT COVER TRAVEL TO 85° MAX.
15. PIN HOLES .032 MAX. DIA ARE ALLOWABLE ALONG SEAMS OF COVER TO FACILITATE FOAMING PROCESS. TWO HOLES .18 DIA ARE ALLOWABLE ON ENDS OF CASE TO FACILITATE FOAMING OF CASE. ALL HOLES TO BE SEALED WITH ADHESIVE PER NOTE 7.

TABLE I

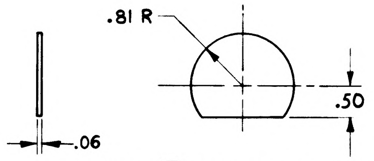
ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12

16. LOCATE SPRING TENSION ITEM ⑯ TO INSURE .020-.030 SPRING DEFLECTION WHEN COVER IS IN CLOSED POSITION.
17. ITEM ㊸ SHALL BE MADE OF SURFACE BONDED LAMINATE MATERIAL PER MIL-S-22499 (.003 LAMINATE THICKNESS) TYPE I, CLASS 2 COMPOSITION I (QQ-A-561).

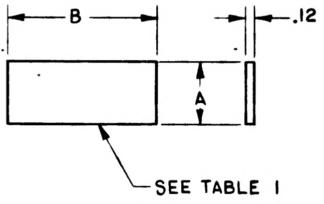


1.68 R
105°
.81 R
.06

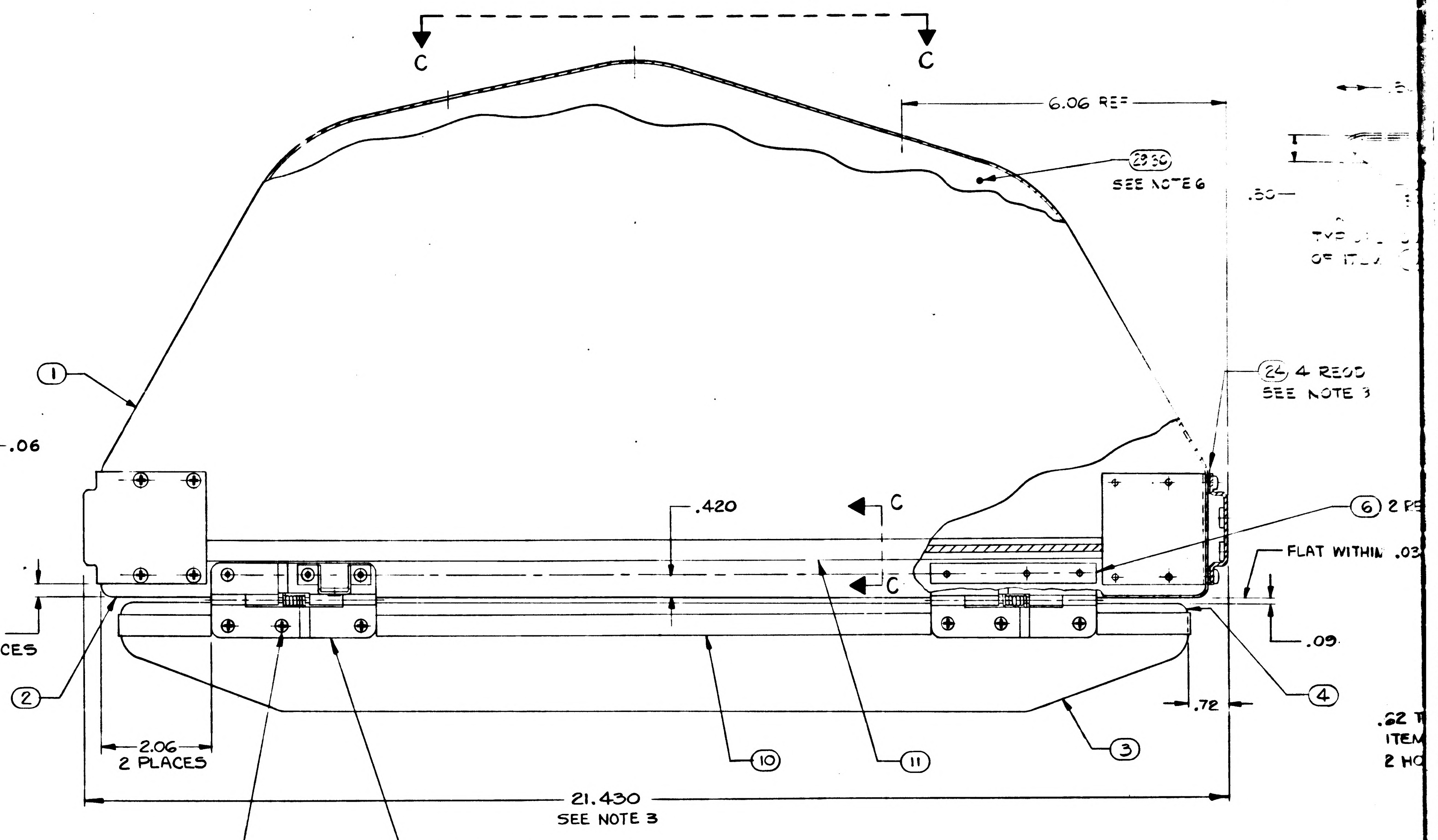
ITEM ㊴ 1021314-006 SEE NOTE 12



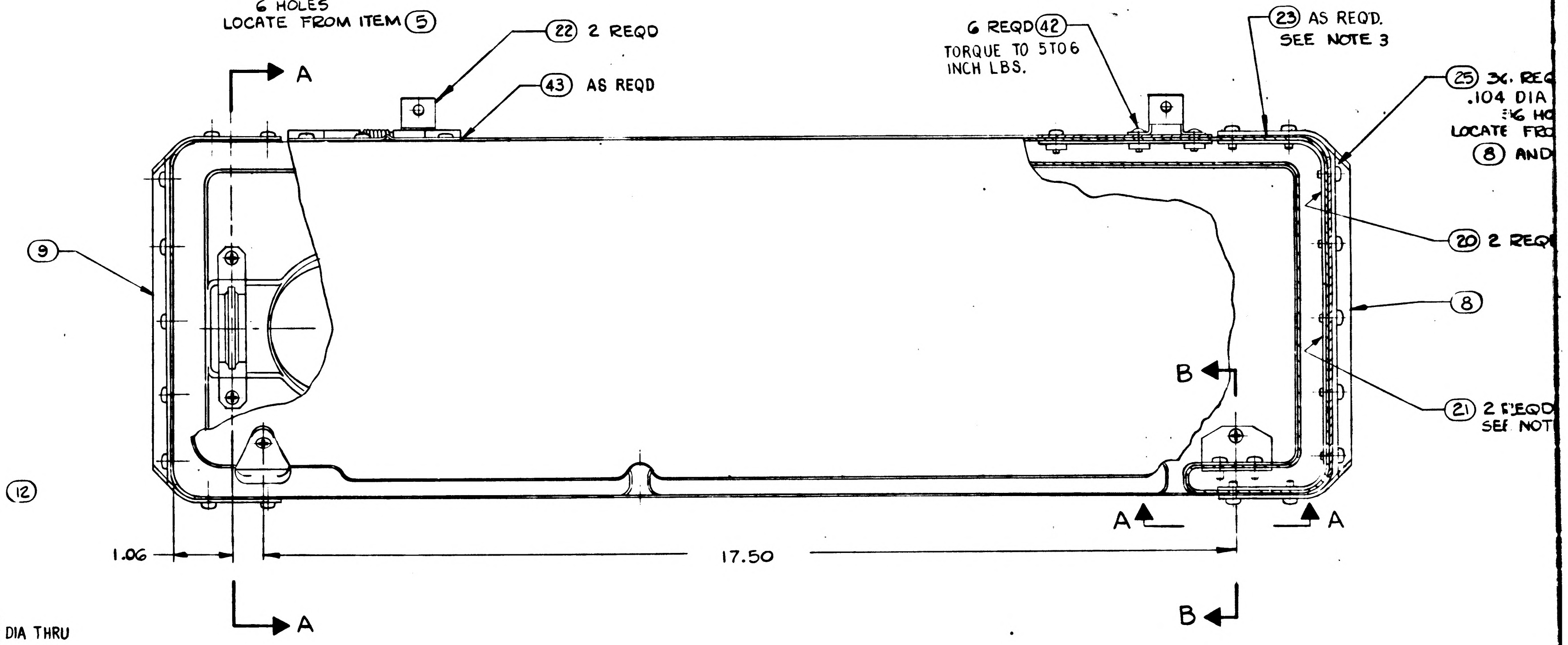
ITEM ㊲ 1021314-004 SEE NOTE 12



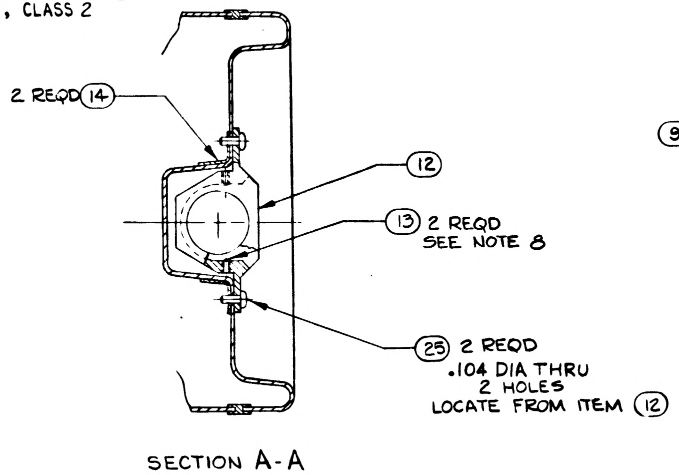
B
.12
A
SEE TABLE I



C
C
6.06 REF
㉙㉚ SEE NOTE 6
①
㉔ 4 REQD SEE NOTE 3
.420
C
C
⑥ 2 P
FLAT WITHIN .03
.09
.26 2 PLACES
②
④
.72
2.06 2 PLACES
⑩
⑪
③
21.430 SEE NOTE 3
⑤ 2 REQD
㉕ 6 REQD .104 DIA THRU 6 HOLES LOCATE FROM ITEM ⑤
.50

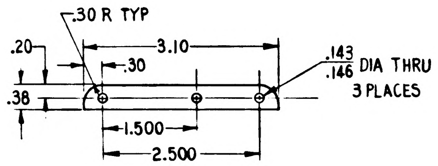


㉒ 2 REQD
㊸ AS REQD
6 REQD ㊷ TORQUE TO 5TO6 INCH LBS.
㉓ AS REQD. SEE NOTE 3
㉕ 36 REQ .104 DIA 36 HO LOCATE FRO ⑧ AND
A
⑨
⑳ 2 REQ
⑧
B
㉑ 2 REQD SEE NOT
A
A
1.06
17.50
A
B



2 REQD ⑭
⑫
⑬ 2 REQD SEE NOTE 8
㉕ 2 REQD .104 DIA THRU 2 HOLES LOCATE FROM ITEM ⑫

SECTION A-A



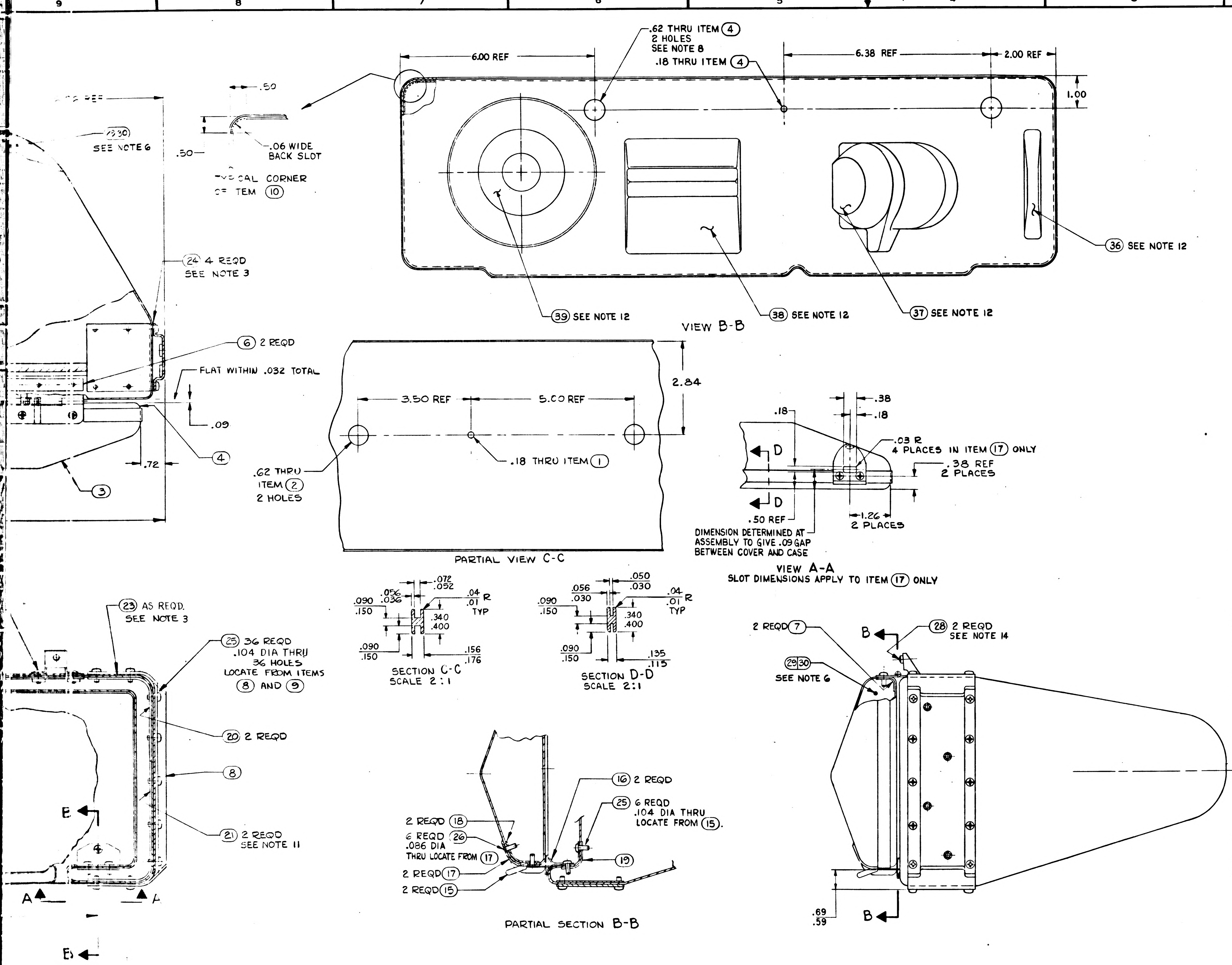
.30 R TYP
3.10
.20
.30
.38
.143 .146 DIA THRU 3 PLACES
1.500
2.500

DETAIL OF ITEM ㊸
SEE NOTE 17

1021314	REV	SH 1

1/1021314

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.P.
C		REVISED PER TDRR 28'44		28-APR-66	B
D		REVISED PER TDRR 28883		20-MAY-66	B
E		REVISED PER TDRR 29366			R.N.
F		REVISED PER TDRR 29964		15 JULY 66	J.E.G.


.62 THRU ITEM (4)
2 HOLES
SEE NOTE 8
.18 THRU ITEM (4)
6.00 REF
6.38 REF
2.00 REF
1.00
.50
.06 WIDE
BACK SLOT
TYPICAL CORNER
OF ITEM (10)
(29)(30)
SEE NOTE 6
(24) 4 REQD
SEE NOTE 3
(36) SEE NOTE 12
(39) SEE NOTE 12
(38) SEE NOTE 12
(37) SEE NOTE 12
VIEW B-B
(6) 2 REQD
FLAT WITHIN .032 TOTAL
.09
(4)
.72
(3)
2.84
3.50 REF
5.00 REF
.62 THRU
ITEM (2)
2 HOLES
.18 THRU ITEM (1)
PARTIAL VIEW C-C
.38
.18
.03 R
4 PLACES IN ITEM (17) ONLY
.38 REF
2 PLACES
1.26
2 PLACES
.50 REF
DIMENSION DETERMINED AT
ASSEMBLY TO GIVE .09 GAP
BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM (17) ONLY
D
(23) AS REQD.
SEE NOTE 3
(25) 36 REQD
.104 DIA THRU
36 HOLES
LOCATE FROM ITEMS
(8) AND (9)
(20) 2 REQD
(8)
(21) 2 REQD
SEE NOTE 11
E
A
.072
.052
.056
.036
.090
.150
.04
.01 R
TYP
.340
.400
.156
.176
SECTION C-C
SCALE 2:1
.050
.030
.056
.030
.135
.115
SECTION D-D
SCALE 2:1
2 REQD (7)
(28) 2 REQD
SEE NOTE 14
(29)(30)
SEE NOTE 6
B
.69
.59
(16) 2 REQD
(25) 6 REQD
.104 DIA THRU
LOCATE FROM (15).
2 REQD (18)
6 REQD (26)
.086 DIA
THRU LOCATE FROM (17)
2 REQD (17)
2 REQD (15)
(19)
PARTIAL SECTION B-B

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 17	43	AR	1021314-007	SHIM-HINGE
SEE NOTE 10	42	6	1010618-15	SCREW, BUTTON HD.
SEE NOTE 10	41	AR	1010718	PRIMER, ADHESIVE
	40	AR	MIL-A-25457	ADHESIVE-PRESSURE SENSITIVE
	39	1	1021314-006	PAD, PRESSURE
	38	1	1021314-005	PAD, PRESSURE
	37	1	1021314-004	PAD, PRESSURE
	36	1	1021314-003	PAD, PRESSURE
~~SEE NOTE 10~~	35	~~AR~~	~~1010686~~	~~CATALYST (CLEAR)~~
	34	~~AR~~	~~1010657~~	~~EPOXY RESIN (CLEAR)~~
	33	~~6~~	~~1010868-2~~	~~RIVET BLIND, UNIVERSAL HEAD~~
SEE NOTE 10	32	AR	1010661	EPOXY RESIN
	31	AR	1010679	ADHESIVE ACTIVATOR
	30	AR	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10	29	AR	1010863	POLYURETHENE RESIN
	28	2	1008872-001	BUMPER, RUBBER
~~SEE NOTE 10~~	~~27~~	~~6~~	~~1010618-14~~	~~SCREW, BUTTON HEAD~~
	26	6	MS 21207C4-6	SCREW, FLAT HD. - SELF THD
	25	50	MS 24622-16	SCREW, PAN HD
	24	4	1008871-002	SHIM-LAMINATED
	23	AR	1008871-001	SHIM-LAMINATED
	22	2	1021311	STOP, COVER
	21	2	1021275	BRACKET, ANGLE-LOWER
	20	2	1021273	BRACKET, ANGLE-UPPER
	19	2	1021276	BRACKET, ANGLE, CATCH
	18	2	1021280	BRACKET, ANGLE, STRIKE
	17	2	1021312	STRIKE, CATCH
	16	2	1021264	SPRING, TENSION
	15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)
	14	2	1021279	BRACKET, ANGLE
SEE NOTE 10	13	2	1011288-1	PLUNGER, QUICK RELEASE
	12	1	1021277	HOLDER, FILTER
SEE NOTE 4	11	AR	1021314-002	SEAL, PLASTIC
SEE NOTE 4	10	AR	1021314-001	SEAL, PLASTIC
	9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
	8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
	7	2	1021313	BRACKET, ANGLE, HINGE
	6	2	1021278	STRIP REINFORCING, HINGE (INSEP ASSY)
	5	2	1021265	HINGE, BUTT (INSEP. ASSY)
	4	1	1021310	LINER, COVER
	3	1	1021257	COVER, CASE
	2	1	1021309	LINER, CASE
	1	1	1021256	CASE, STOWAGE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021255-021	1021255-021
1021255-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL ——
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Dyzel DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE,
EYEPIECE STOWAGE
(INSEPARABLE ASSEMBLY)

SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET 1 OF 1

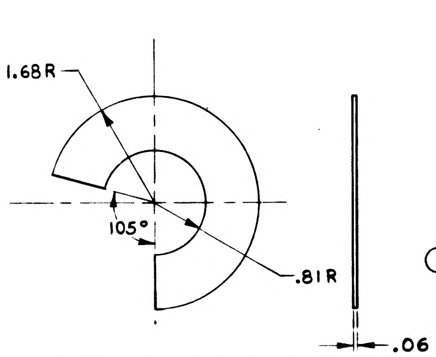
NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
3. ITEMS ⑥ AND ⑨ TO BE SHIMMED TO MEET DIMENSIONS AND TO ALIGN THE INSERTS OF ITEMS ⑧ AND ⑨ TO EACH OTHER WITHIN .010 TRUE POSITION.
4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD 1008875 (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 51.00 REF AND OF ITEM ⑪ 40.00 REF. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
5. HOLES REQUIRED FOR ITEMS ㉕ AND ㉝ SHALL BE .143-.146 DIA DRILLED AT ASSEMBLY.
6. CASE AND COVER ASSEMBLIES SHALL BE FOAM FILLED USING ITEMS ㉙ AND ㉚ PER ND1002002 TYPE C SUCH THAT THE AVERAGE CURED FOAM DENSITY SHALL BE 3.0 TO 4.0 LBS PER CUBIC FOOT. CURE SHALL BE 140°F FOR SIX HOURS WITH TEMPERATURE CHANGE NOT TO EXCEED 60° F PER HOUR
7. FOAM FILL HOLES SHALL BE SEALED USING A THIXOTROPIC ADHESIVE PER MMM-A-132 TYPE I, CLASS 3 (EPON 934) WITH .062 MIN. THICKNESS FLUSH WITH SURFACE.
8. ITEM ⑬ TO BE INSTALLED INTO ITEM ⑫ SUCH THAT THE BALL EXTENDS BEYOND SURFACE OF ITEM ⑫ BY .020.
9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
10. VENDOR ITEM - SEE SPECIFICATION CONTROL DRAWING.
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.
12. ITEMS ㊱㊲㊳ AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS ㊱ ㊲ ㊳ AND ㊴ TO ITEM ④ WITH ADHESIVE ITEMS ㊵ AND ㊶ PER ND1002151 WITH ROOM TEMPERATURE CURE.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.
14. ITEM ㉘ TO BE POSITIONED TO LIMIT COVER TRAVEL TO 85° MAX.
15. PIN HOLES .032 MAX. DIA ARE ALLOWABLE ALONG SEAMS OF COVER TO FACILITATE FOAMING PROCESS. TWO HOLES .18 DIA ARE ALLOWABLE ON ENDS OF CASE TO FACILITATE FOAMING OF CASE. ALL HOLES TO BE SEALED WITH ADHESIVE PER NOTE 7.

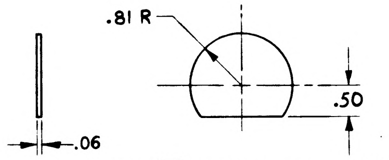
TABLE I

ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12

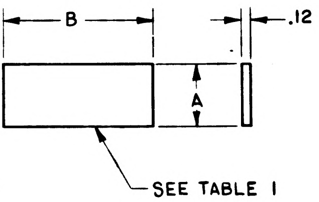
16. LOCATE SPRING TENSION ITEM ⑯ TO INSURE .020-.030 SPRING DEFLECTION WHEN COVER IS IN CLOSED POSITION.
17. ITEM ㊸ SHALL BE MADE OF SURFACE BONDED LAMINATE MATERIAL PER MIL-S-22499 (.003 LAMINATE THICKNESS) TYPE I, CLASS 2 COMPOSITION I (QQ-A-561).
18. *FOR SPARES ONLY: ASSEMBLE THE CASE TO A SPARE ANNUNCIATOR PANEL AND SUPPORT ASSEMBLY P/N 1021272-021 PER 1021255 AND PERFORM THE WORKMANSHIP VIBRATION PER PS 2016153.*

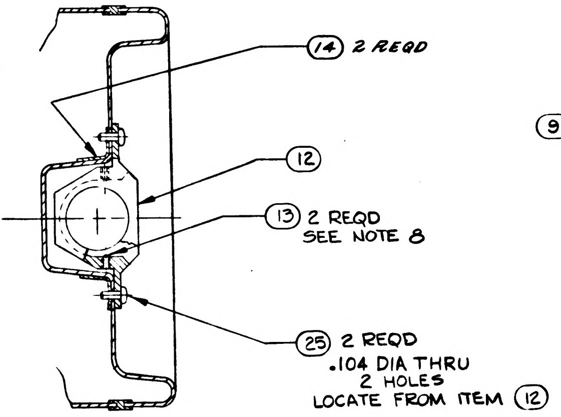

1.68 R
105°
.81 R
.06

ITEM ㊴ 1021314-006 SEE NOTE 12

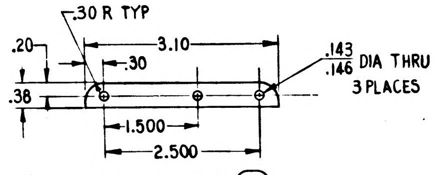


ITEM ㊲ 1021314-004 SEE NOTE 12


B
.12
A
SEE TABLE I

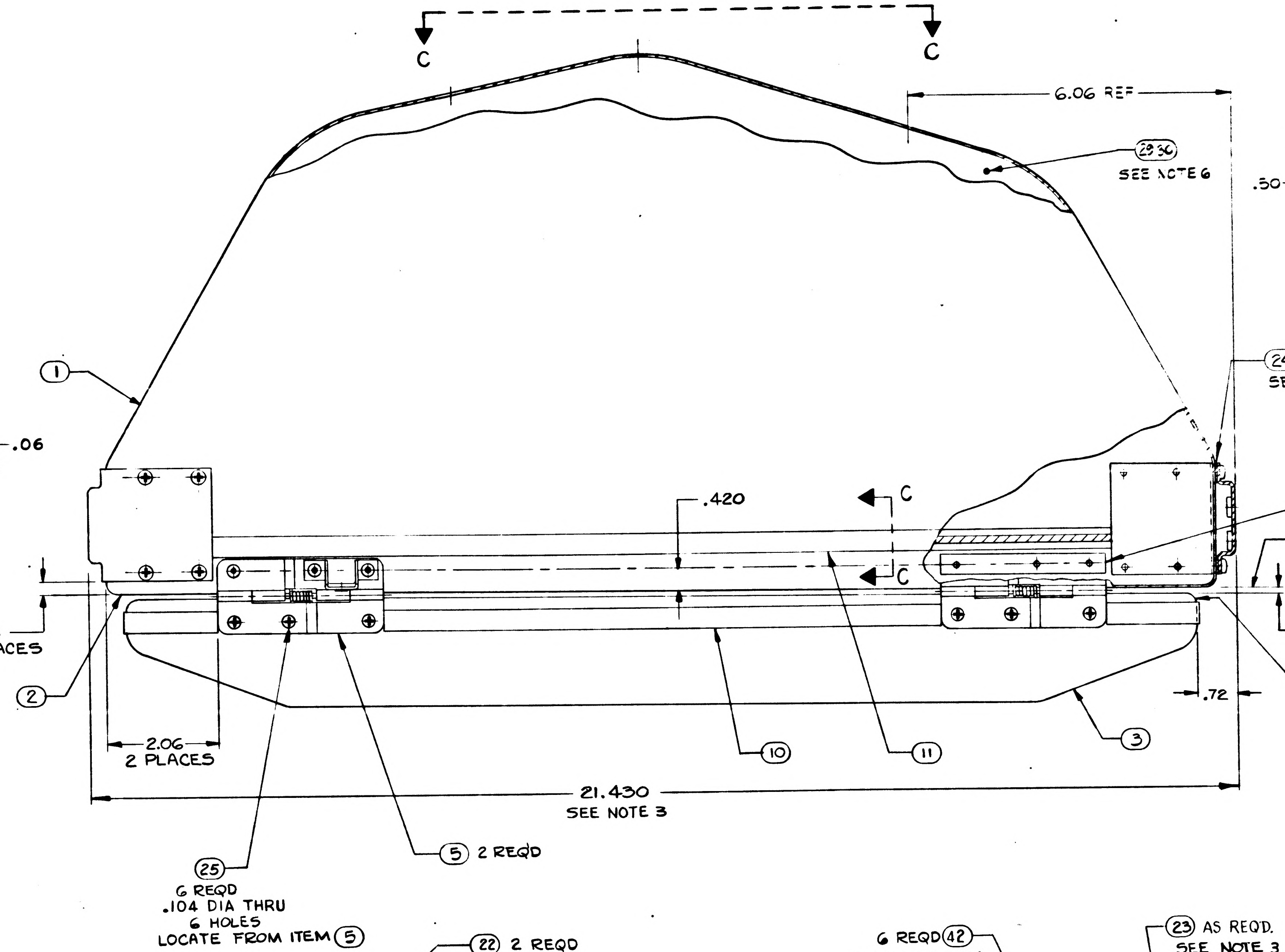

⑭ 2 REQD
⑫
⑬ 2 REQD
SEE NOTE 8
㉕ 2 REQD
.104 DIA THRU
2 HOLES
LOCATE FROM ITEM ⑫

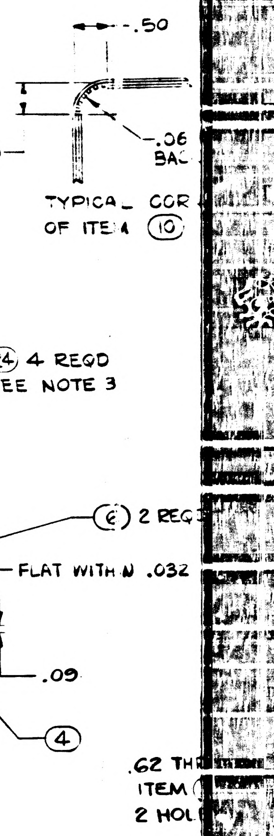
SECTION A-A

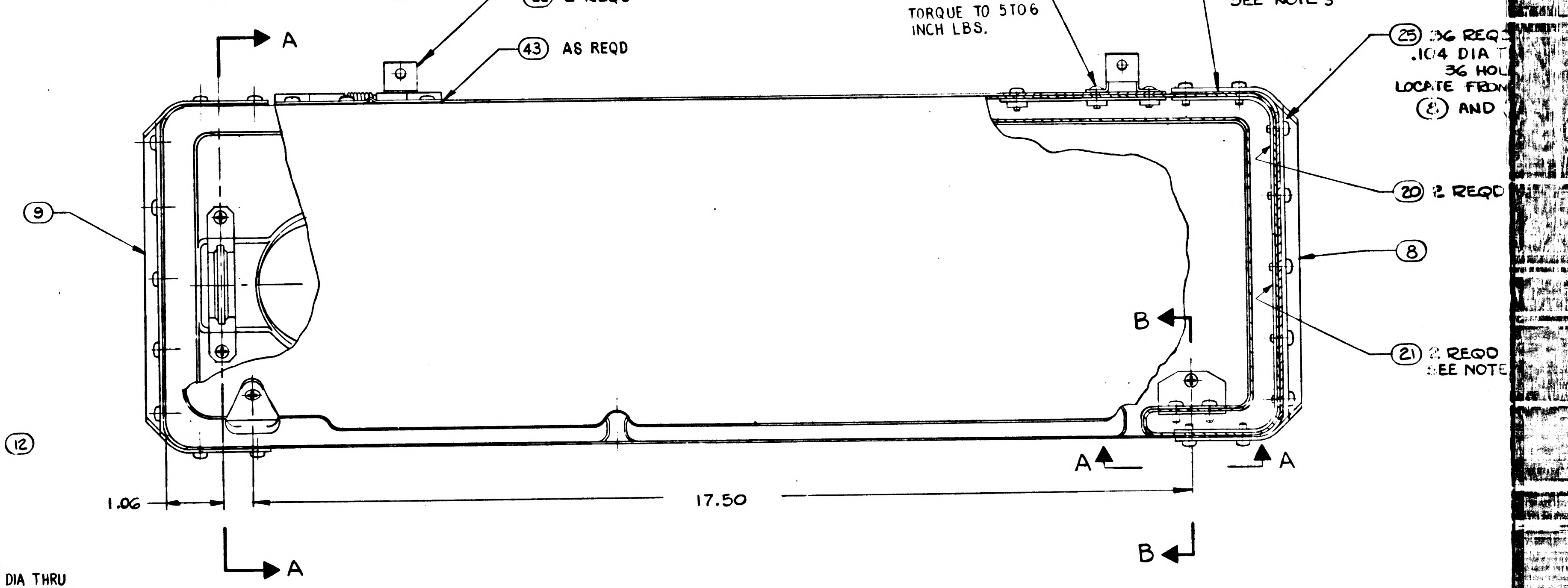

.30 R TYP
.20
.30
3.10
.38
1.500
2.500
.143
.146 DIA THRU
3 PLACES

DETAIL OF ITEM ㊸

SEE NOTE 17


C
C
6.06 REF
㉙㉚
SEE NOTE 6
①
㉔ 4 REQD
SEE NOTE 3
.420
C
C
⑥ 2 REQ
FLAT WITHIN .032
.26
2 PLACES
②
.09
.72
④
③
2.06
2 PLACES
⑩
⑪
21.430
SEE NOTE 3
⑤ 2 REQD
㉕
6 REQD
.104 DIA THRU
6 HOLES
LOCATE FROM ITEM ⑤

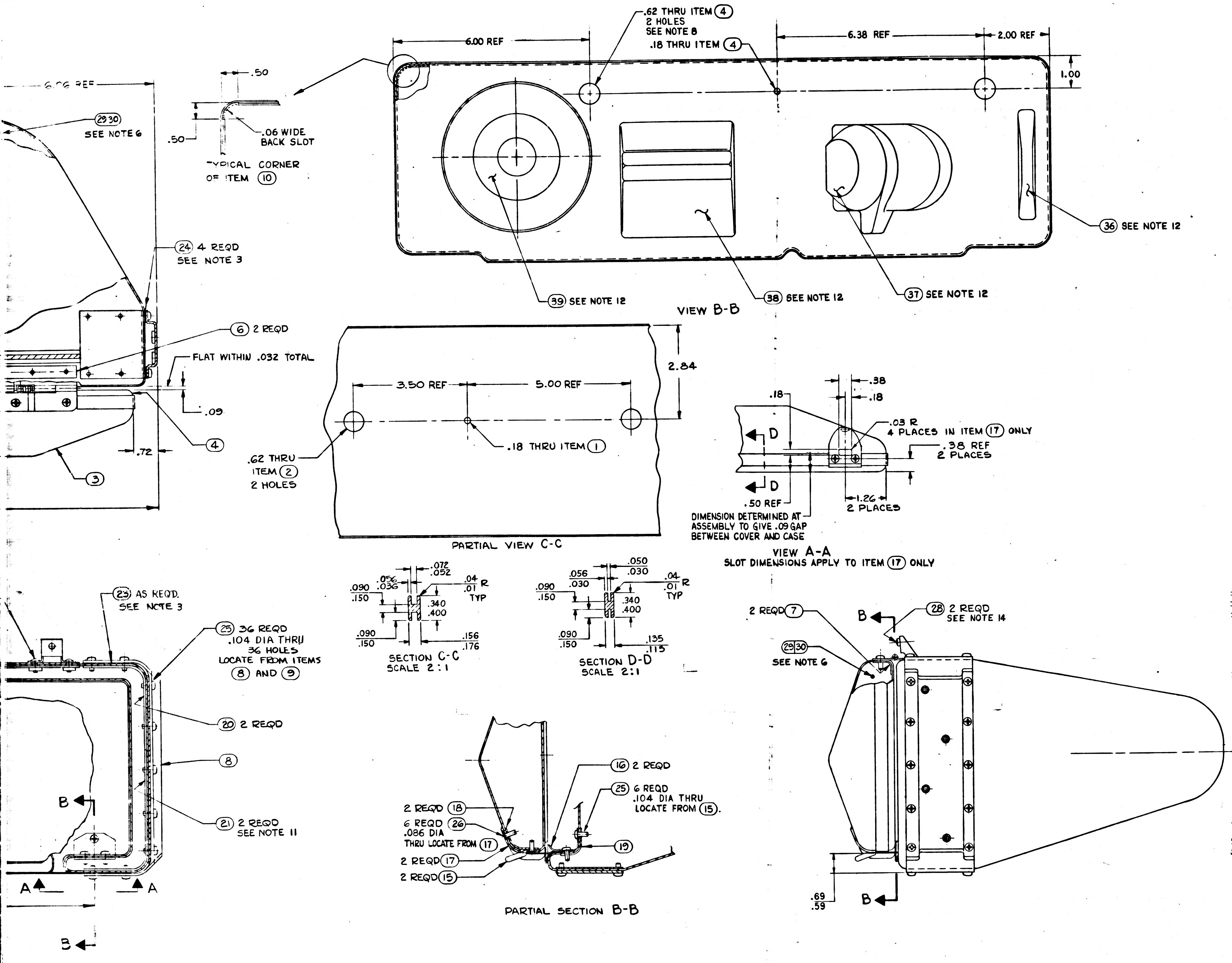

.50
.50
.06
BAC
TYPICAL COR
OF ITEM ⑩
.62 TH
ITEM
2 HOL


㉒ 2 REQD
㊸ AS REQD
6 REQD ㊷
TORQUE TO 5 TO 6
INCH LBS.
㉓ AS REQD.
SEE NOTE 3
A
㉕ 36 REQ
.104 DIA T
36 HOL
LOCATE FROM
⑧ AND
⑨
⑳ 2 REQD
⑧
B
㉑ 2 REQD
SEE NOTE
A
A
1.06
17.50
B
A

1021314	KEY F	SH 1

17/1021314

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.P. EF
C		REVISED PER TDRR 28144		28-APR-66	B. CP
D		REVISED PER TDRR 28883		20-MAY-66	B. Y.M.
E		REVISED PER TDRR 29366		9 JUN 66	R.W.T. CP
F		REVISED PER TDRR 29964		13 JULY 66	J.E.G.
G		REVISED PER TDRR 30251		20 JUL 66	GWM JRC



9
8
7
6
5
4
3
2
1
H
G
F
E
D
C
B
A
6.06 REF
6.00 REF
.62 THRU ITEM (4)
2 HOLES
SEE NOTE 8
.18 THRU ITEM (4)
6.38 REF
2.00 REF
1.00
.50
.50
.06 WIDE
BACK SLOT
TYPICAL CORNER
OF ITEM (10)
(29)(30)
SEE NOTE 6
(24) 4 REQD
SEE NOTE 3
(36) SEE NOTE 12
(39) SEE NOTE 12
(38) SEE NOTE 12
(37) SEE NOTE 12
VIEW B-B
(6) 2 REQD
FLAT WITHIN .032 TOTAL
.09
(4)
.72
(3)
2.84
3.50 REF
5.00 REF
.62 THRU
ITEM (2)
2 HOLES
.18 THRU ITEM (1)
PARTIAL VIEW C-C
.18
.38
.18
.03 R
4 PLACES IN ITEM (17) ONLY
.38 REF
2 PLACES
D
D
.50 REF
1.26
2 PLACES
DIMENSION DETERMINED AT
ASSEMBLY TO GIVE .09 GAP
BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM (17) ONLY
.090
.150
.056
.036
.072
.052
.04
.01 R
TYP
.340
.400
.090
.150
.156
.176
SECTION C-C
SCALE 2:1
.090
.150
.056
.030
.050
.030
.04
.01 R
TYP
.340
.400
.090
.150
.135
.115
SECTION D-D
SCALE 2:1
(23) AS REQ'D.
SEE NOTE 3
(25) 36 REQD
.104 DIA THRU
36 HOLES
LOCATE FROM ITEMS
(8) AND (9)
(20) 2 REQD
(8)
(21) 2 REQD
SEE NOTE 11
B
A
A
B
(16) 2 REQD
(25) 6 REQD
.104 DIA THRU
LOCATE FROM (15).
2 REQD (18)
6 REQD (26)
.086 DIA
THRU LOCATE FROM (17)
(19)
2 REQD (17)
2 REQD (15)
PARTIAL SECTION B-B
2 REQD (7)
(28) 2 REQD
SEE NOTE 14
B
(29)(30)
SEE NOTE 6
.69
.59
B

		ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 17		43	AR	1021314-007	SHIM-HINGE
SEE NOTE 10		42	6	1010618-15	SCREW, BUTTON HD.
SEE NOTE 10		41	AR	1010718	PRIMER, ADHESIVE
		40	AR	MIL-A-25457	ADHESIVE-PRESSURE SENSITIVE
		39	1	1021314-006	PAD, PRESSURE
		38	1	1021314-005	PAD, PRESSURE
		37	1	1021314-004	PAD, PRESSURE
		36	1	1021314-003	PAD, PRESSURE
~~SEE NOTE 10~~		~~35~~	~~AR~~	~~1010686~~	~~CATALYST (CLEAR)~~
		~~34~~	~~AR~~	~~1010657~~	~~EPOXY RESIN (CLEAR)~~
		~~33~~	~~6~~	~~1010868-2~~	~~RIVET, BLIND, UNIVERSAL HEAD~~
SEE NOTE 10		32	AR	1010661	EPOXY RESIN
		31	AR	1010679	ADHESIVE ACTIVATOR
		30	AR	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10		29	AR	1010863	POLYURETHENE RESIN
		28	2	1008872-001	BUMPER, RUBBER
~~SEE NOTE 10~~		~~27~~	~~6~~	~~1010613-14~~	~~SCREW, BUTTON HEAD~~
		26	6	MS 21207C4-6	SCREW, FLAT HD.-SELF THD
		25	50	MS 24622-16	SCREW, PAN HD
		24	4	1008871-002	SHIM-LAMINATED
		23	AR	1008871-001	SHIM-LAMINATED
		22	2	1021311	STOP, COVER
		21	2	1021275	BRACKET, ANGLE-LOWER
		20	2	1021273	BRACKET, ANGLE-UPPER
		19	2	1021276	BRACKET, ANGLE, CATCH
		18	2	1021280	BRACKET, ANGLE, STRIKE
		17	2	1021312	STRIKE, CATCH
		16	2	1021264	SPRING, TENSION
		15	2	1021262	CATCH, CLAMPING (INSEP. ASSY)
		14	2	1021279	BRACKET, ANGLE
SEE NOTE 10		13	2	1011288-1	PLUNGER, QUICK RELEASE
		12	1	1021277	HOLDER, FILTER
SEE NOTE 4		11	AR	1021314-002	SEAL, PLASTIC
SEE NOTE 4		10	AR	1021314-001	SEAL, PLASTIC
		9	1	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
		8	1	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
		7	2	1021313	BRACKET, ANGLE, HINGE
		6	2	1021278	STRIP, REINFORCING, HINGE (INSEP ASSY)
		5	2	1021265	HINGE, BUTT (INSEP. ASSY)
		4	1	1021310	LINER, COVER
		3	1	1021257	COVER, CASE
		2	1	1021309	LINER, CASE
		1	1	1021256	CASE, STOWAGE

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021255-021	1021255-021
1021255-011	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Ozel DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASE, EYEPIECE STOWAGE (INSEPARABLE ASSEMBLY)

SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET 1 OF 1

1021314 G 1

2/1021314

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BOND ITEMS ⑥ ⑦ ⑩ ⑪ ⑭ ⑱ ⑲ ⑳ AND ㉑ TO ITEMS ① ② ③ AND ④, USING ITEMS ㉛ AND ㉜ PER ND1002187 TYPE II WITH ROOM TEMPERATURE CURE. ADHESIVE JOINT TO BE .002 TO .010 THICK.
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4. ITEMS ⑩ AND ⑪ TO BE MADE FROM ABS PLASTIC PER SCD 1008875 (U.S. ROYALITE PR-50 HC/HC COLOR GRAY #36231 OF FED-STD-595). TOTAL LENGTH REQUIRED OF ITEM ⑩ IS 51.00 REF AND OF ITEM ⑪ 40.00 REF. PARTS TO BE CUT TO LENGTHS TO FIT MATING PARTS WITHIN .020 MAX.
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9. IDENTIFY USING DRAWING NUMBER PER ND1002019.
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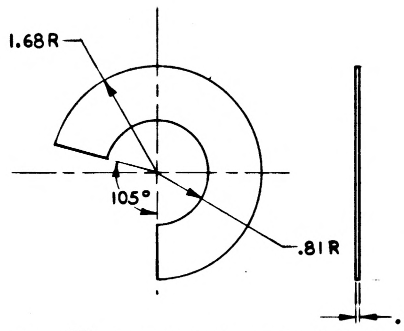
12. ITEMS (36|37|38) AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS (36 37 38) AND ㊴ TO ITEM ④ WITH ADHESIVE ITEMS ㊵ AND ㊶ PER ND1002151 WITH ROOM TEMPERATURE CURE.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.
14. ITEM ㉘ TO BE POSITIONED TO LIMIT COVER TRAVEL TO 85° MAX.
15. PIN HOLES .032 MAX. DIA ARE ALLOWABLE ALONG SEAMS OF COVER TO FACILITATE FOAMING PROCESS. TWO HOLES .18 DIA ARE ALLOWABLE ON ENDS OF CASE TO FACILITATE FOAMING OF CASE. ALL HOLES TO BE SEALED WITH ADHESIVE PER NOTE 7.

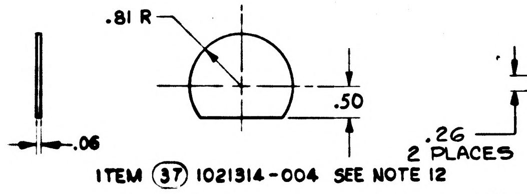
TABLE I

ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12

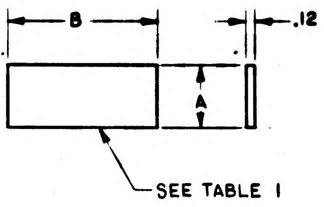
16. LOCATE SPRING TENSION ITEM ⑯ TO INSURE .020-.030 SPRING DEFLECTION WHEN COVER IS IN CLOSED POSITION.
17. ITEM ㊸ SHALL BE MADE OF SURFACE BONDED LAMINATE MATERIAL PER MIL-S-22499 (.003 LAMINATE THICKNESS) TYPE I, CLASS 2 COMPOSITION I (QQ-A-561).
18. *FOR SPARES ONLY: ASSEMBLE THE CASE TO A SPARE ANNUNCIATOR PANEL AND SUPPORT ASSEMBLY P/N 1021272-021 PER 1021255 AND PERFORM THE WORKMANSHIP VIBRATION PER PS 2016153.*
19. ANODIZE ITEM ⑰ PER MIL-A-8625, TYPE II, COLOR GRAY, AFTER MACHINING THE SLOT AT THE PIECE PART LEVEL.

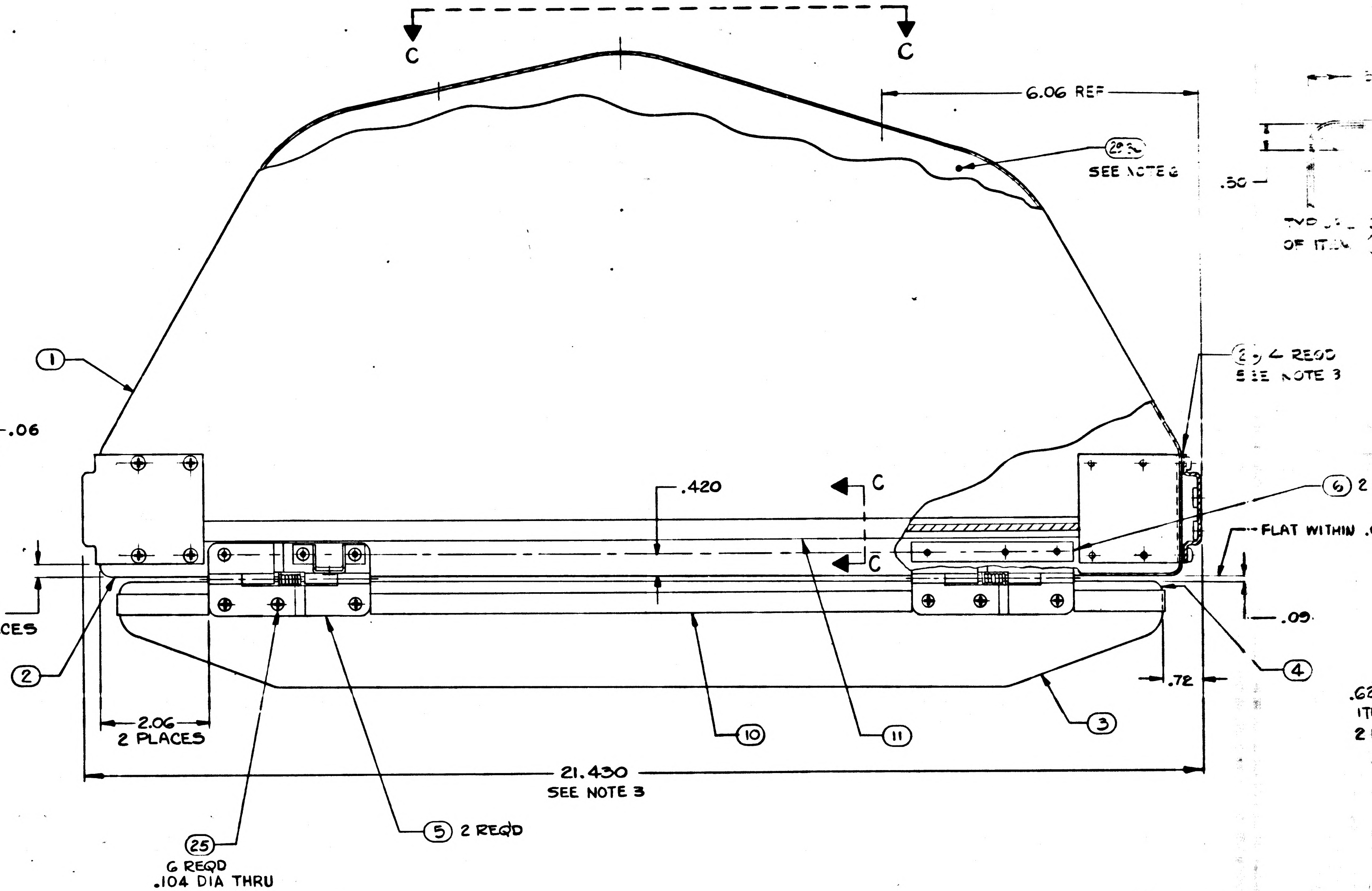

1.68R
105°
.81R
.06

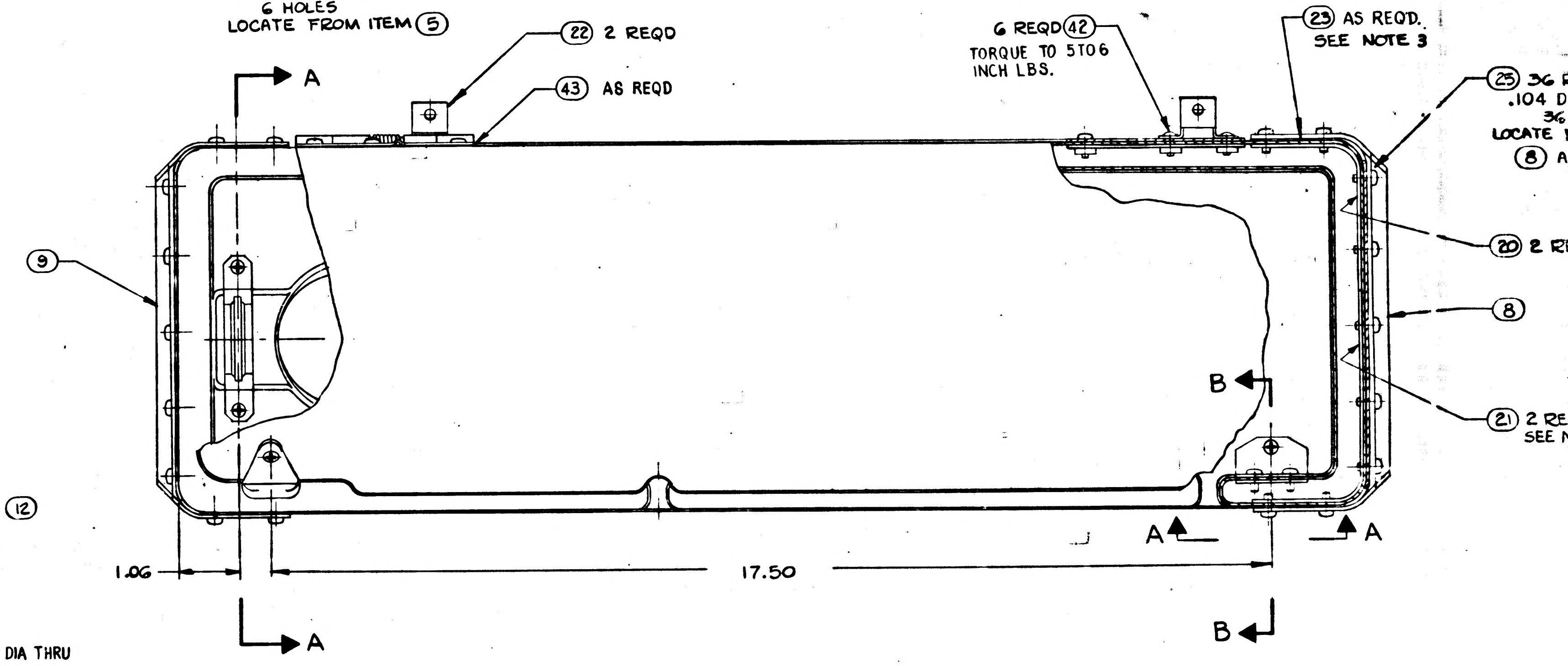
ITEM ㊴ 1021314-006 SEE NOTE 12

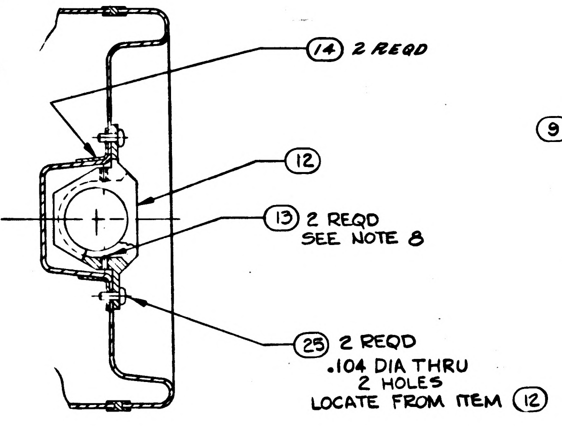

.81 R
.50
.06
.26
2 PLACES

ITEM ㊲ 1021314-004 SEE NOTE 12

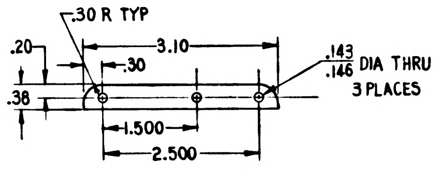

B
.12
A
SEE TABLE I


C
C
6.06 REF
㉙㉚
SEE NOTE 6
.50
①
② 4 REQD
SEE NOTE 3
.420
C
C
⑥ 2
FLAT WITHIN
.09
.26
④
.72
②
③
⑩
⑪
2.06
2 PLACES
21.430
SEE NOTE 3
㉕
6 REQD
.104 DIA THRU
6 HOLES
LOCATE FROM ITEM ⑤
⑤ 2 REQD


㉒ 2 REQD
㊸ AS REQD
6 REQD ㊷
TORQUE TO 5 TO 6
INCH LBS.
㉓ AS REQ'D.
SEE NOTE 3
㉕ 36
.104
LOCATE
⑧
A
⑨
⑳ 2
⑧
㉑ 2
SEE
B
B
A
A
A
A
1.06
17.50


⑭ 2 REQD
⑫
⑬ 2 REQD
SEE NOTE 8
㉕ 2 REQD
.104 DIA THRU
2 HOLES
LOCATE FROM ITEM ⑫

SECTION A-A


.30 R TYP
.20
3.10
.30
.38
.143
.146 DIA THRU
3 PLACES
1.500
2.500

DETAIL OF ITEM ㊸
SEE NOTE 17

1021314	REV S	SH 1

1/1021314

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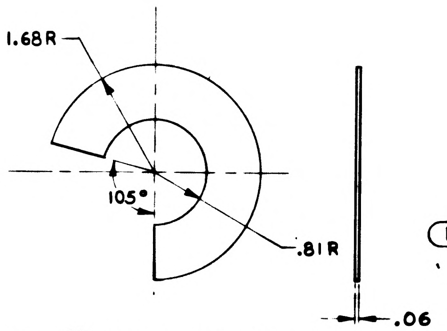
11. ITEM ㉑ TO BE CUT TO LENGTH TO ALLOW .020 MAX. GAP BETWEEN ITEMS ⑳ AND ㉑.
12. ITEMS (36|37|38) AND ㊴ TO BE MADE FROM CELLULAR SILICONE SHEET PER 1010897. BOND ITEMS (36|37 38) AND ㊴ TO ITEM ④ WITH ADHESIVE ITEMS ㊵ AND ㊶ PER ND1002151 WITH ROOM TEMPERATURE CURE.
13. APPLY ADHESIVE, ITEMS ㉛ AND ㉜ TO ALL SCREW THREADS ITEMS ㉕ AND ㉖ PER ND 1002187 PRIOR TO FINAL ASSEMBLY.
14. ITEM ㉘ TO BE POSITIONED TO LIMIT COVER TRAVEL TO 85° MAX.
15. PIN HOLES .032 MAX. DIA ARE ALLOWABLE ALONG SEAMS OF COVER TO FACILITATE FOAMING PROCESS. TWO HOLES .18 DIA ARE ALLOWABLE ON ENDS OF CASE TO FACILITATE FOAMING OF CASE. ALL HOLES TO BE SEALED WITH ADHESIVE PER NOTE 7.

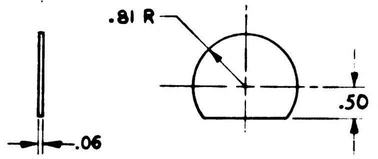
TABLE I

ITEM NO.	PART NO.	DIM A	DIM B	
36	1021314-003	.44	3.50	SEE NOTE 12
38	1021314-005	2.62	3.38	SEE NOTE 12

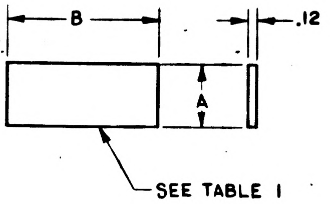
16. LOCATE SPRING TENSION ITEM ⑯ TO INSURE .020-.030 SPRING DEFLECTION WHEN COVER IS IN CLOSED POSITION.
17. ITEM ㊸ SHALL BE MADE OF SURFACE BONDED LAMINATE MATERIAL PER MIL-S-22499 (.003 LAMINATE THICKNESS) TYPE I, CLASS 2 COMPOSITION I (QQ-A-561).
18. *FOR SPARES ONLY: ASSEMBLE THE CASE TO A SPARE ANNUNCIATOR PANEL AND SUPPORT ASSEMBLY P/N 1021272-021 PER 1021255 AND PERFORM THE WORKMANSHIP VIBRATION PER PS 2016153.*
19. ANODIZE ITEM ⑰ PER MIL-A-8625, TYPE II, COLOR GRAY, AFTER MACHINING THE SLOT AT THE PIECE PART LEVEL.
20. BOND ITEMS 44, 45 AND 46 TO ITEM 2, USING ITEMS 47 AND 48.

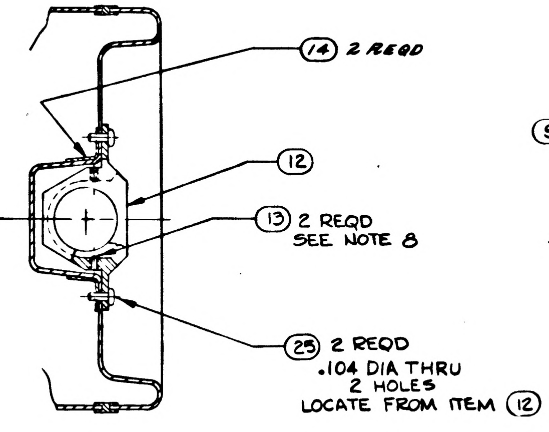

1.68 R
105°
.81 R
.06

ITEM ㊴ 1021314-006 SEE NOTE 12

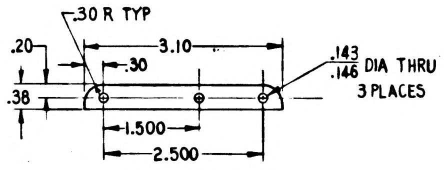


ITEM ㊲ 1021314-004 SEE NOTE 12

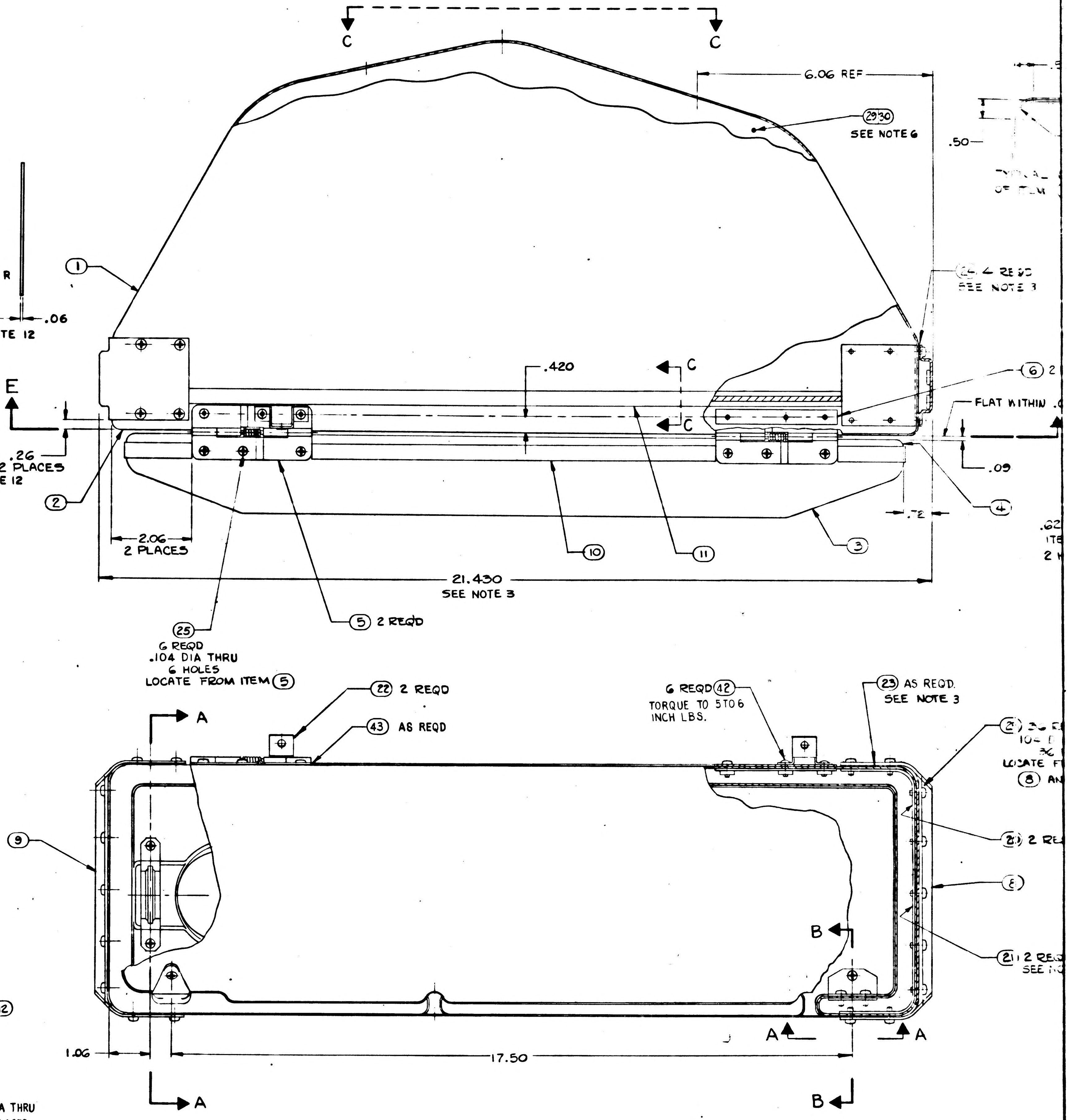

B
.12
A
SEE TABLE I


⑭ 2 REQD
⑫
⑬ 2 REQD
SEE NOTE 8
㉕ 2 REQD
.104 DIA THRU
2 HOLES
LOCATE FROM ITEM ⑫

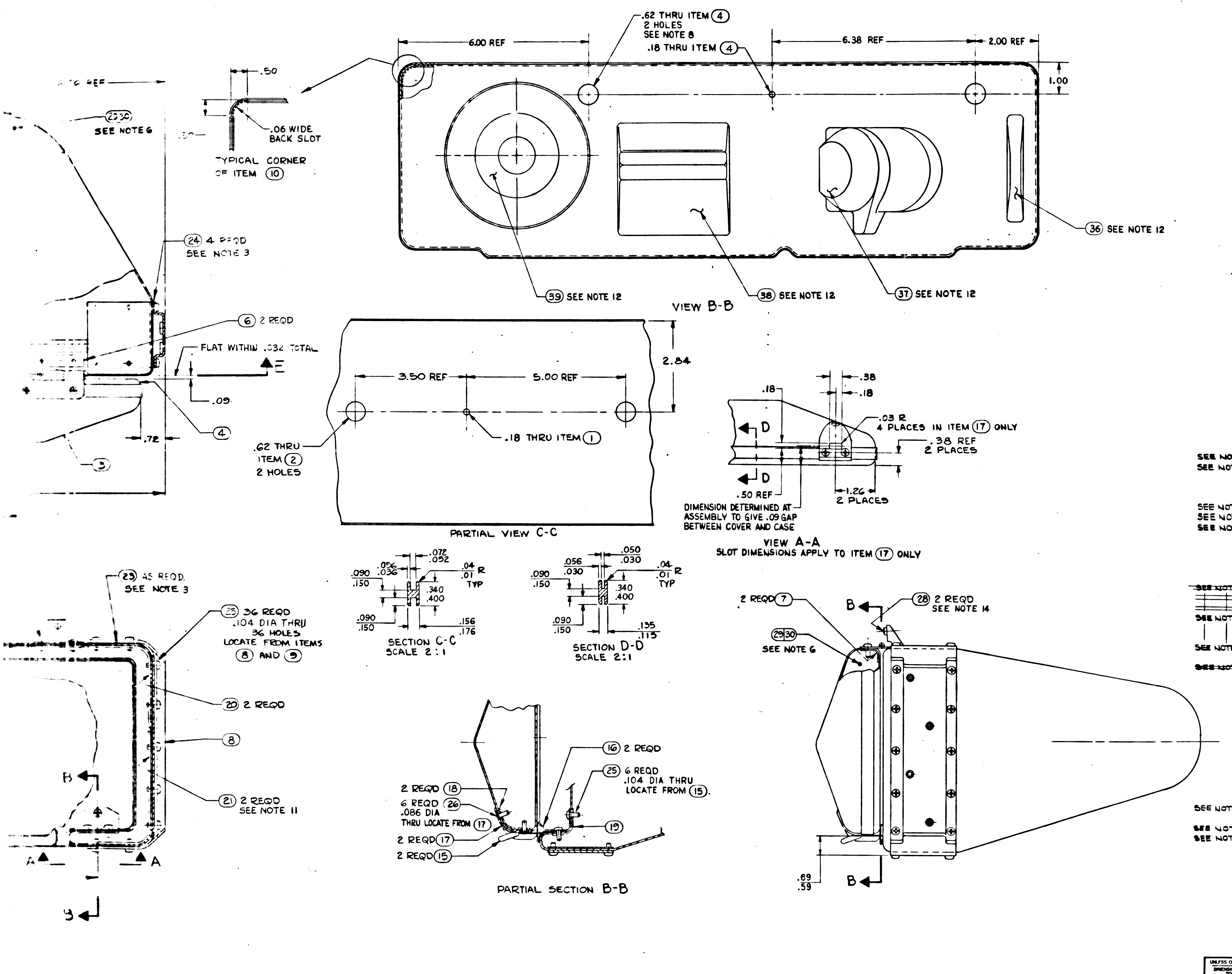
SECTION A-A


.30 R TYP
.20
3.10
.30
.38
.143
.146 DIA THRU
3 PLACES
1.500
2.500

DETAIL OF ITEM ㊸
SEE NOTE 17


C
C
6.06 REF
㉙㉚
SEE NOTE 6
.50
①
E
.420
C
C
.26
2 PLACES
②
⑥
FLAT WITHIN
.09
④
.72
2.06
2 PLACES
⑩
⑪
③
21.430
SEE NOTE 3
㉕
6 REQD
.104 DIA THRU
6 HOLES
LOCATE FROM ITEM ⑤
⑤ 2 REQD
㉒ 2 REQD
㊸ AS REQD
6 REQD ㊷
TORQUE TO 5 TO 6
INCH LBS.
㉓ AS REQD.
SEE NOTE 3
A
⑨
B
A
A
1.06
17.50
A
B
⑧
㉑ 2 REQD
⑧
㉑ 2 REQD

1021314 | REV 4 | SH 1


.62 THRU ITEM (4)
2 HOLES
SEE NOTE 8
.18 THRU ITEM (4)
6.00 REF
6.38 REF
2.00 REF
1.00
.50
.06 WIDE
BACK SLOT
TYPICAL CORNER
OF ITEM (10)
(29)(30)
SEE NOTE 6
(24) 4 REQD
SEE NOTE 3
(36) SEE NOTE 12
(39) SEE NOTE 12
(38) SEE NOTE 12
(37) SEE NOTE 12
VIEW B-B
(6) 2 REQD
FLAT WITHIN .032 TOTAL
E
.09
(4)
.72
(3)
2.84
3.50 REF
5.00 REF
.62 THRU
ITEM (2)
2 HOLES
.18 THRU ITEM (1)
PARTIAL VIEW C-C
.38
.18
.18
D
D
.03 R
4 PLACES IN ITEM (17) ONLY
.38 REF
2 PLACES
1.26
2 PLACES
.50 REF
DIMENSION DETERMINED AT
ASSEMBLY TO GIVE .09 GAP
BETWEEN COVER AND CASE
VIEW A-A
SLOT DIMENSIONS APPLY TO ITEM (17) ONLY
.072
.052
.056
.036
.090
.150
.04 R
.01
TYP
.340
.400
.090
.150
.156
.176
SECTION C-C
SCALE 2:1
.050
.030
.056
.030
.090
.150
.04 R
.01
TYP
.340
.400
.090
.150
.135
.115
SECTION D-D
SCALE 2:1
(23) AS REQD
SEE NOTE 3
(25) 36 REQD
.104 DIA THRU
36 HOLES
LOCATE FROM ITEMS
(8) AND (9)
(20) 2 REQD
(8)
(21) 2 REQD
SEE NOTE 11
B
A
A
B
(16) 2 REQD
(25) 6 REQD
.104 DIA THRU
LOCATE FROM (15).
2 REQD (18)
6 REQD (26)
.086 DIA
THRU LOCATE FROM (17)
2 REQD (17)
2 REQD (15)
(19)
PARTIAL SECTION B-B
2 REQD (7)
(28) 2 REQD
SEE NOTE 14
(29)(30)
SEE NOTE 6
B
B
.69
.59

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 25321			
B		REVISED PER TDRR 27973		20 APR 66	J.H.P. EH
C		REVISED PER TDRR 28144		28 APR -66	B CF
D		REVISED PER TDRR 28883		20-MAY-66	B YM
E		REVISED PER TDRR 29366		9 JUN 66	R.W.
F		REVISED PER TDRR 29964		13 JULY 66	J.E.
G		REVISED PER TDRR 30251		26 JUL 66	GHM JSC
H		REVISED PER TDRR 30540		6 SEPT 66	J

	-011	-001	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
SEE NOTE 20	AR	–	48	1010900	PRIMER COATING
SEE NOTE 20	AR	–	47	1006338-000	SEALING COMPOUND, SILICONE RUBBER
	3	–	46	2010783-003	SHIM
	3	–	45	2010783-004	SHIM
	3	–	44	2010783-001	SHIM
SEE NOTE 17	AR	AR	43	1021314-007	SHIM-HINGE
SEE NOTE 10	6	6	42	1010618-15	SCREW, BUTTON HD.
SEE NOTE 10	AR	AR	41	1010718	PRIMER, ADHESIVE
	AR	AR	40	MIL-A-25457	ADHESIVE-PRESSURE SENSITIVE
	1	1	39	1021314-006	PAD, PRESSURE
	1	1	38	1021314-005	PAD, PRESSURE
	1	1	37	1021314-004	PAD, PRESSURE
	1	1	36	1021314-003	PAD, PRESSURE
~~SEE NOTE 10~~			35	~~1010686~~	~~CATALYST (CLEAR)~~
			34	~~1010657~~	~~EPOXY RESIN (CLEAR)~~
			33	~~1010868-2~~	~~RIVET BLIND UNIVERSAL HEAD~~
SEE NOTE 10	AR	AR	32	1010661	EPOXY RESIN
	AR	AR	31	1010679	ADHESIVE ACTIVATOR
	AR	AR	30	1010864	POLYURETHENE PREPOLYMER
SEE NOTE 10	AR	AR	29	1010863	POLYURETHENE RESIN
	2	2	28	1008872-001	BUMPER, RUBBER
~~SEE NOTE 10~~			27	~~1010618-14~~	~~SCREW, BUTTON HEAD~~
	6	6	26	MS 21207C4-6	SCREW, FLAT HD. - SELF THD
	50	50	25	MS 24622-16	SCREW, PAN HD
	4	4	24	1008871-002	SHIM-LAMINATED
	AR	AR	23	1008871-001	SHIM-LAMINATED
	2	2	22	1021311	STOP, COVER
	2	2	21	1021275	BRACKET, ANGLE-LOWER
	2	2	20	1021273	BRACKET, ANGLE-UPPER
	2	2	19	1021276	BRACKET, ANGLE, CATCH
	2	2	18	1021280	BRACKET, ANGLE, STRIKE
	2	2	17	1021312	STRIKE, CATCH
	2	2	16	1021264	SPRING, TENSION
	2	2	15	1021262	CATCH, CLAMPING (INSEP. ASSY)
	2	2	14	1021279	BRACKET, ANGLE
SEE NOTE 10	2	2	13	1011288-1	PLUNGER, QUICK RELEASE
	1	1	12	1021277	HOLDER, FILTER
SEE NOTE 4	AR	AR	11	1021314-002	SEAL, PLASTIC
SEE NOTE 4	AR	AR	10	1021314-001	SEAL, PLASTIC
	1	1	9	1021259	SUPPORT, L.H.-CASE (INSEP ASSY)
	1	1	8	1021258	SUPPORT, R.H.-CASE (INSEP ASSY)
	2	2	7	1021313	BRACKET, ANGLE, HINGE
	2	2	6	1021278	STRIP REINFORCING, HINGE (INSEP ASSY)
	2	2	5	1021265	HINGE, BUTT (INSEP. ASSY)
	1	1	4	1021310	LINER, COVER
	1	1	3	1021257	COVER, CASE
	1	1	2	1021309	LINER, CASE
	1	1	1	1021256	CASE, STOWAGE
	QUANTITY REQD			LIST OF PARTS AND MATERIALS	

1021314 H

NEXT ASSY	USED ON
1021255-041	1021255-041
1021255-031	1021255-031
1021255-021	1021255-021
1021255-011	1021255-011
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Orgel DATE
CHECKED
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

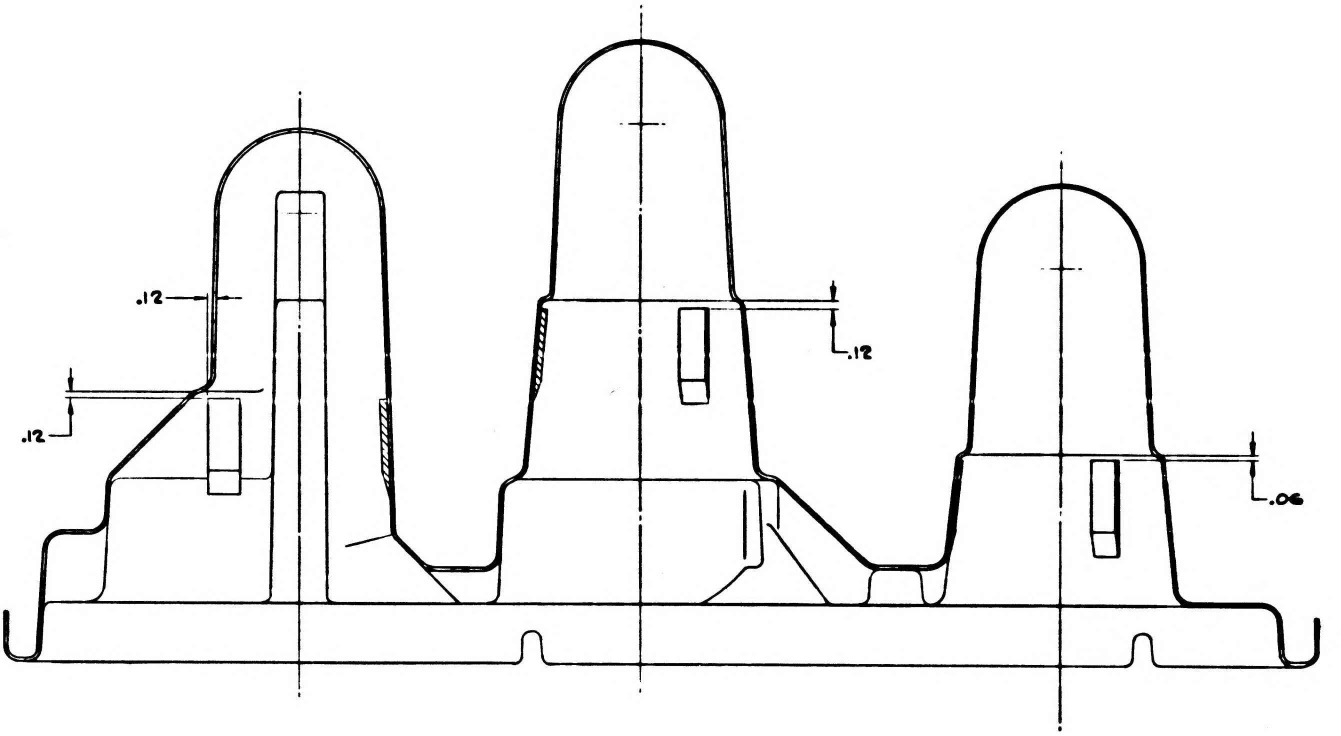
CASE, EYEPIECE STOWAGE (INSEPARABLE ASSEMBLY)

SIZE J2
CODE IDENT NO. 80230
1021314
SCALE FULL
SHEET 1 OF 2

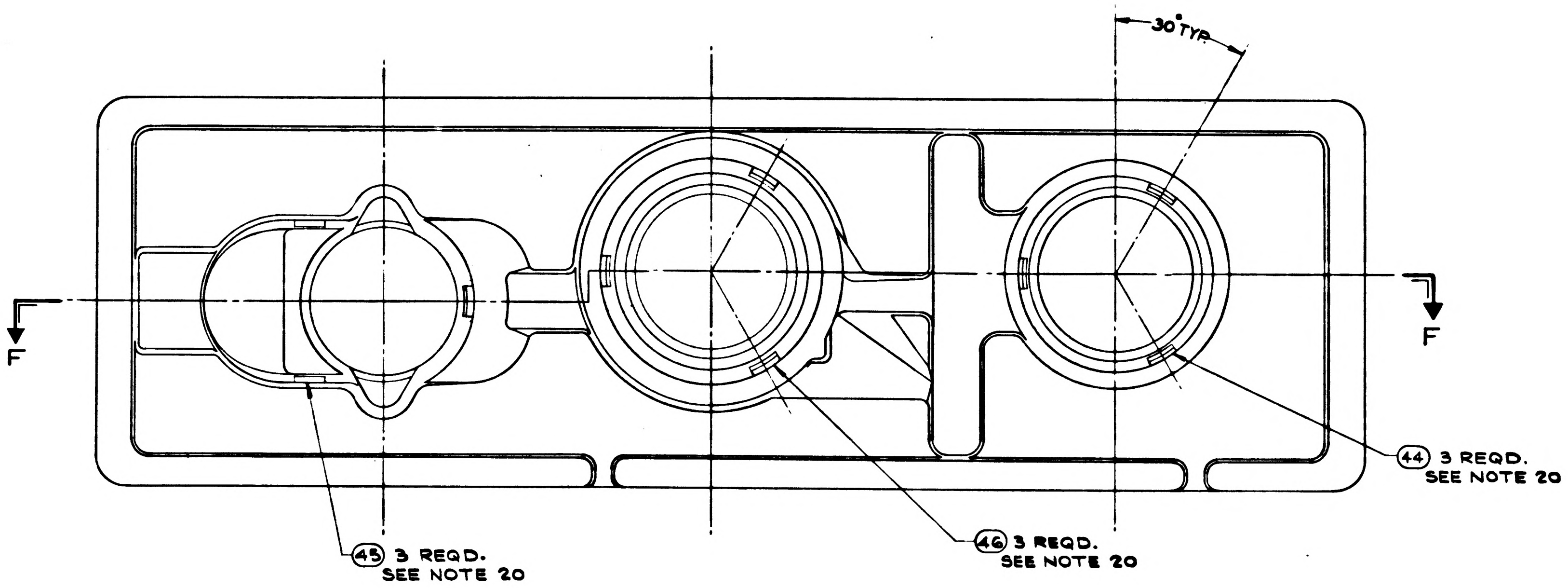
1021314 H 1

2/1021314

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPROVED
	H	REVISED PER TDRR 30540	CHG. NO.	9 SEPT 66	JI



SECTION F-F



(44) 3 REQD. SEE NOTE 20

(45) 3 REQD. SEE NOTE 20

(46) 3 REQD. SEE NOTE 20

VIEW E-E

-011 ASSY ONLY

SIZE E	CODE IDENT NO. 80230	1021314	
SCALE FULL			SHEET 2 OF 2

APPLICATION	
NEXT ASSY	USED ON
1021272-011	1021255-011
1021272-021	1021255-021

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	INITIAL RELEASE CLASS A PER TDRR 26220	7 FEB 66	

Charleston
31 JAN 66

REV STATUS OF SHEETS	REV	A	A	A	A
	SHEET	1	2	3	4

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN DATE 25 JAN 66
CHECKED Ed Foster 31 JAN 66
APPROVAL 1 FEB 66
APPROVAL 2/11/66
NASA APPROVAL A. C. METZGER 2-11-66
MIT APPROVAL
CONTRACT NAS 9-497

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

LEAD SET AA, ELECTRICAL

CODE IDENT NO. 80230
SIZE A
1021315
REV A
SCALE —
SHEET 1 OF 4

LEAD SET AA 1021315

GENERAL NOTES

NOTE NUMBER	DESCRIPTION
1	NOTE ONE IS NOT APPLICABLE
2	INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
3	APPLY LEAD IDENTIFICATIONS PER ND1002019 AT CENTER-TO-CENTER INTERVALS OF 1.2 INCHES.
4	IDENTIFY PER MIL-STD-130 (ES267) USING PART NUMBER.
5	SPIRALLING OF LEAD IDENTIFICATION IS ALLOWED.
6	LENGTHS SPECIFIED ARE BEFORE ACCESSORIES ARE ATTACHED.
7	SOLDER PER MIL-S-6872 (ES2505-1) USING ITEM 4 OR ITEMS 2 AND 3.

LEAD TOLERANCE CHART

	JKT STRIP LG	SHIELD STRIP LG	LEAD CUT LG	INS STRIP LG
UNDER 3 INCHES	+.06-.06	+.06-.06	+.06-.06	+.06-.00
3 INCH TO 3 FT	+.25-.25	+.25-.25	+.25-.25	

SIZE A CODE IDENT NO. 80230 1021315
SCALE-NONE REV LTR A SHEET 2 OF 4

MIL 2084 9-65

LEAD SET AA 1021315

SEE NOTE

LIST OF MATERIALS

NUMBER	ITEM	QTY	PART NO.	DESCRIPTION
	1	1	1021315-001	WIRE, 1010789-001, 24AWG, YEL, 6 FT 3 INCHES TOTAL LENGTH
	2	AR	SN60WS	SOLDER QQ-S-571(ES2175-1)
	3	AR	MIL-F-14256 TYPE A OR W	FLUX(ES2798)
	4	AR	SN60WRAP	SOLDER QQ-S-571(ES2175-3)

SIZE A CODE IDENT NO. 80230 1021315
SCALE-NONE REV LTR A SHEET 3 OF 4

MIL 2084 9-65

LEAD SET AA 1021315

LEAD IDENT	WIRE MATL ITEM	LEAD LG	CIRCUIT PT FROM (A) TO (B)	TERM. AREA NO.	JKT STRIP LG	SHLD STRIP LG	LEAD CUT LG	INS STRIP LG	TIN	NOTE ONE, FIG	ACCESSORY ITEMS	REMARKS
AA 1	1	13.00	J1-7 E1					.13 .38	NO YES			
AA 2	1	8.00	J2-7 E1					.13 .38	NO YES			
AA 3	1	3.00	J3-7 E1					.13 .38	NO YES			
AA 4	1	10.50	E1 P1-67					.38 .13	YES NO			
AA 5	1	17.00	J1-4 E2					.13 .38	NO YES			
AA 6	1	11.50	J2-4 E2					.13 .38	NO YES			
AA 7	1	6.50	J3-4 E2					.13 .38	NO YES			
AA 8	1	7.00	E2 P1-92					.38 .13	YES NO			

SIZE A CODE IDENT NO. 80230 1021315
SCALE-NONE REV LTR A SHEET 4 OF 4

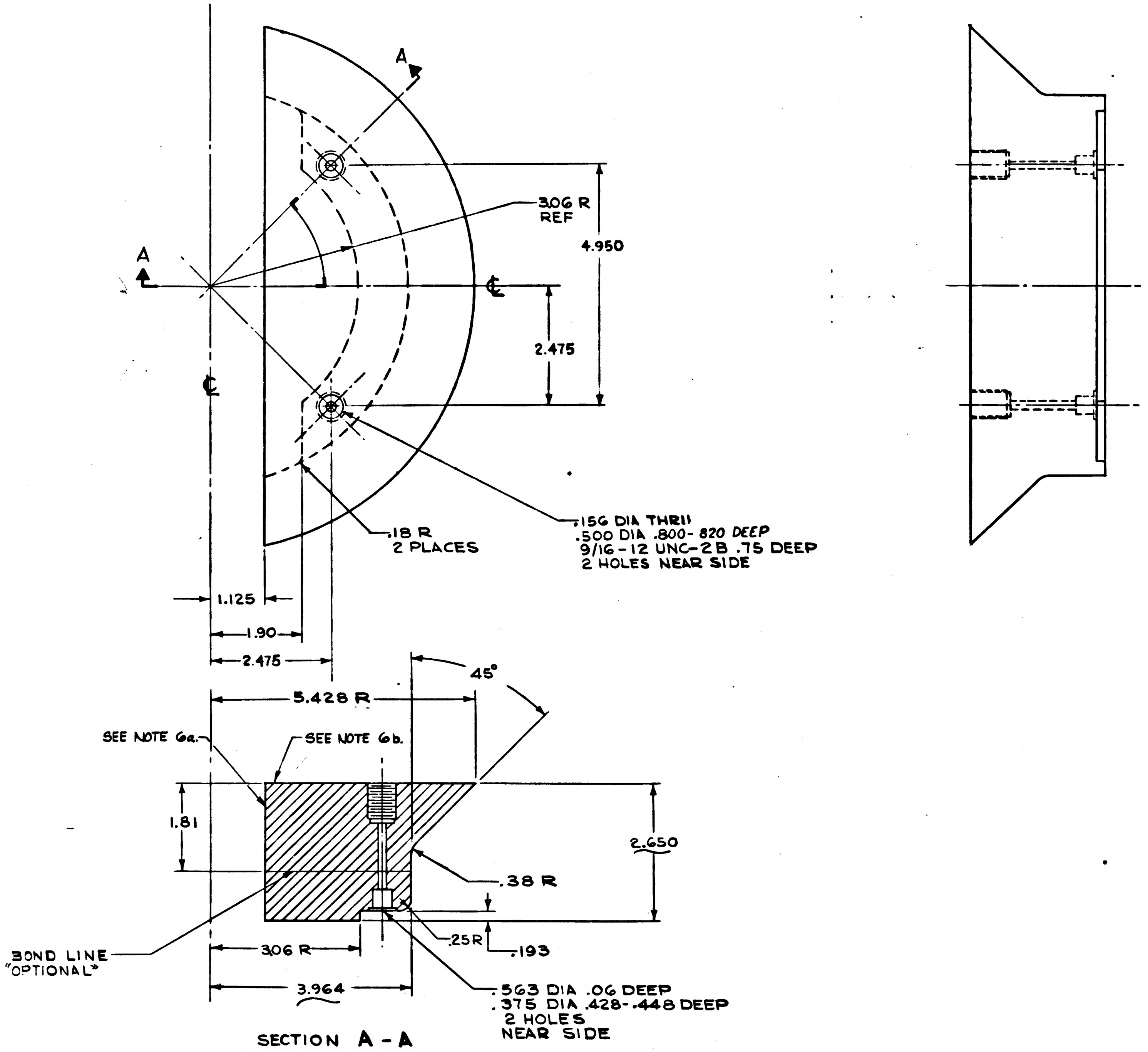
MIL 2084 9-65

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: 1008905-001, -002, OR-003.
3. IF OPTIONAL BOND LINE IS USED, BOND WITH SCD-1008904 UNDER CONTACT PRESSURE OF 10 PSI MINIMUM AND CURE FOR 1½ HOURS MIN. AT 350°±5°F.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. FINISH: SEALING AND PAINT REQUIREMENTS, APPLY SEALER ALL OVER PER ND1002328-001
   - 6a. APPLY BLACK COATING PER ND1002277 TO SPECIFIED SURFACES USING 1012543-001.
   - 6b. APPLY GRAY COATING TO SPECIFIED SURFACES PER ND1002328-002 USING 1008910.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	REVISED NOTE 4	D.D.[illegible]	4 Aug 66	
	B	ADDED NOTE 6	DD 2236	15 [illegible] 66	
	C	REVISED PER ECM 214694		26 AUG 66	
	D	INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	



A
A
3.06 R
REF
4.950
2.475
℄
℄
.18 R
2 PLACES
.156 DIA THRU
.500 DIA .800-.820 DEEP
9/16-12 UNC-2B .75 DEEP
2 HOLES NEAR SIDE
1.125
1.90
2.475
45°
5.428 R
SEE NOTE 6a.
SEE NOTE 6b.
1.81
2.650
.38 R
.25R
.193
BOND LINE
"OPTIONAL"
3.06 R
3.964
.563 DIA .06 DEEP
.375 DIA .428-.448 DEEP
2 HOLES
NEAR SIDE

SECTION A - A

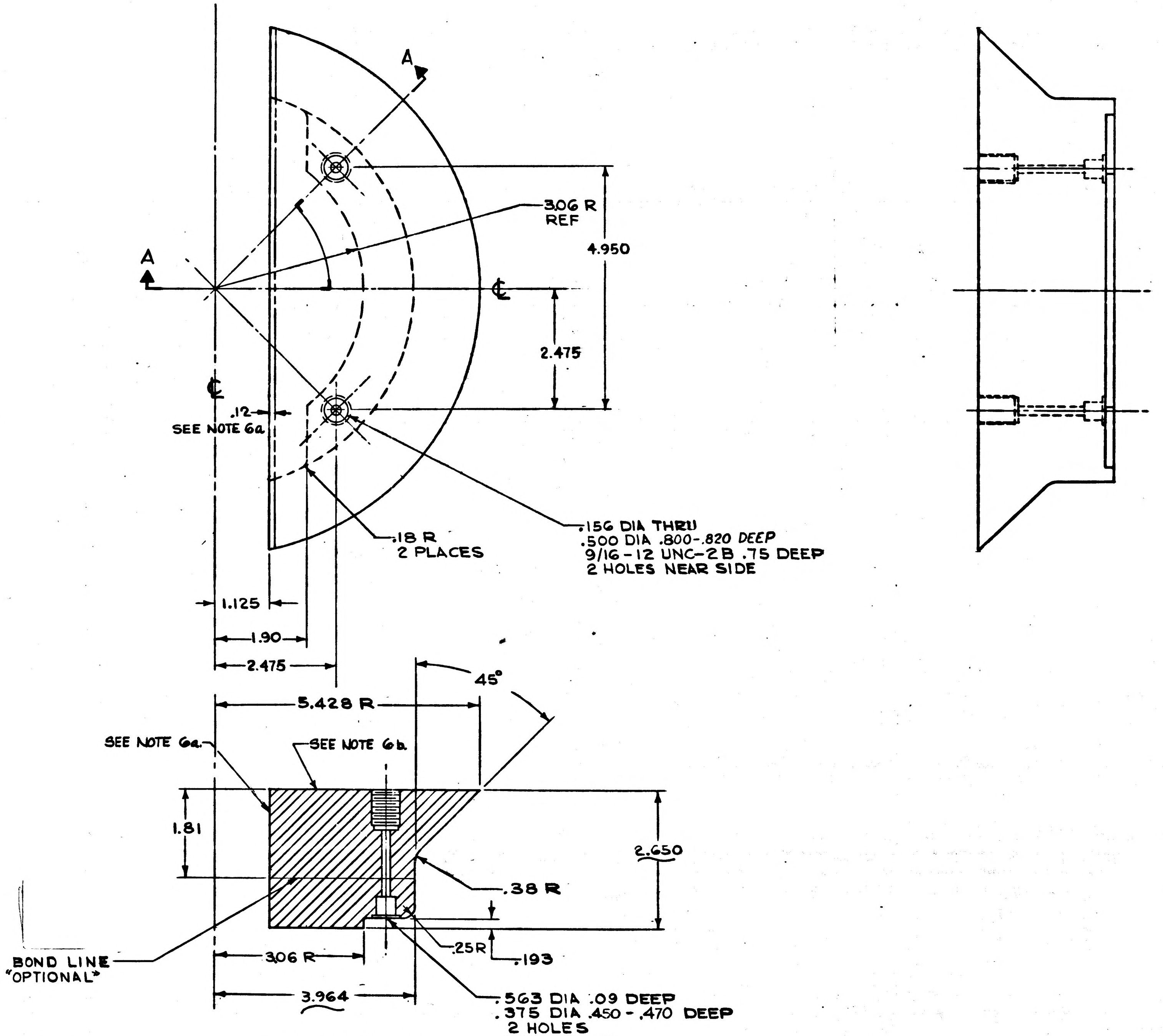
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 2°	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN M. Graham DATE 2-4-66 CHECKED R. Manning 3 Aug 66 APPROVAL CONTRACT NAS 9-497	CROWN HALF, UPPER, SEXTANT COVER
MATERIAL SEE NOTE 2	NASA APPROVAL 9/?/66	SIZE E CODE IDENT NO. 99974 1021320
APPROVAL	APPROVAL	SCALE FULL SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: 1008905-001, -002, OR-003.
3. IF OPTIONAL BOND LINE IS USED BOND WITH SCD-1008904 UNDER CONTACT PRESSURE OF 10 PSI MINIMUM AND CURE FOR 1½ HOURS MIN. AT 350°±5°F.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. IDENTIFY USING DRAWING NUMBER PER ND 1002019.
6. FINISH: SEALING AND PAINT REQUIREMENTS. APPLY SEALER ALL OVER PER ND1002328-001
   - 6a. APPLY BLACK COATING PER ND1002277 TO SPECIFIED SURFACES USING 1012543-001.
   - 6b. APPLY GRAY COATING TO SPECIFIED SURFACES PER ND1002328-002 USING 1008910.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	REVISED NOTE 4	D.O.62215	4 Aug 66	SJD
	B	ADDED NOTE 6	DO62236	15 Aug 66	UX
	C	REVISED PER ECM 214694		26 Aug 66	WD
	D	INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	
	E	REVISED PER TDRR 32328		22 Dec 66	HP



A
A
3.06 R
REF
4.950
℄
2.475
℄
.12
SEE NOTE 6a
.18 R
2 PLACES
.156 DIA THRU
.500 DIA .800-.820 DEEP
9/16-12 UNC-2B .75 DEEP
2 HOLES NEAR SIDE
1.125
1.90
2.475
45°
5.428 R
SEE NOTE 6a
SEE NOTE 6b
1.81
2.650
.38 R
.25R
.193
BOND LINE
"OPTIONAL"
3.06 R
3.964
.563 DIA .09 DEEP
.375 DIA .450-.470 DEEP
2 HOLES
NEAR SIDE

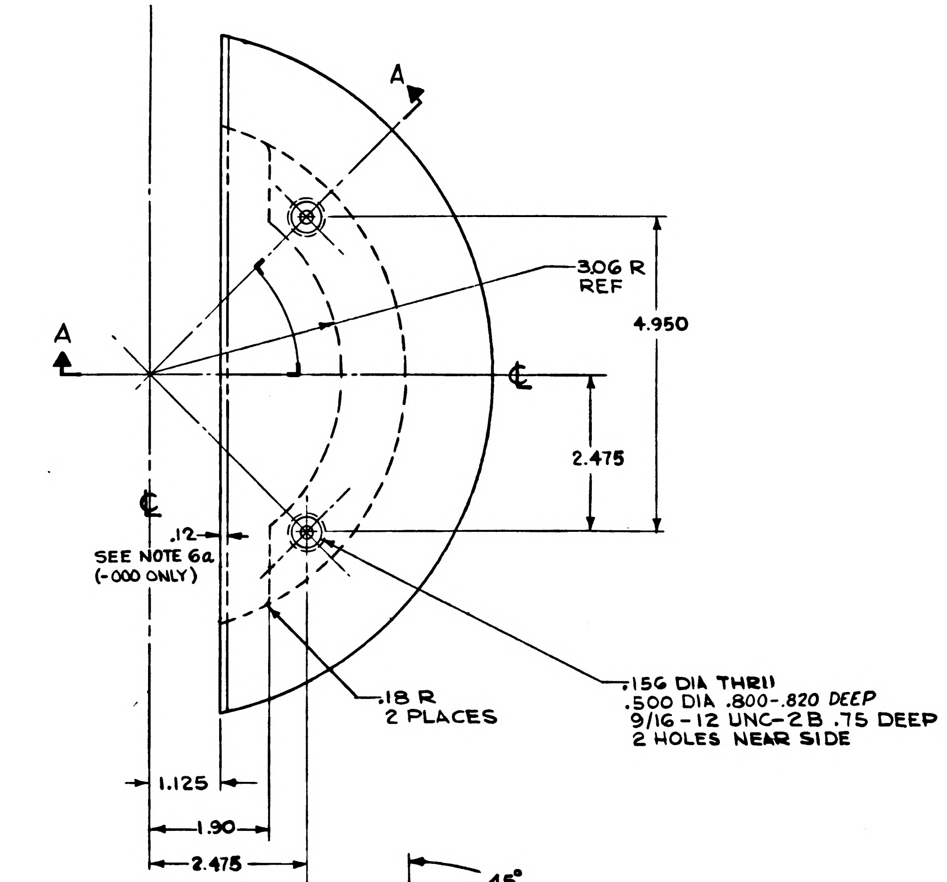
SECTION A-A

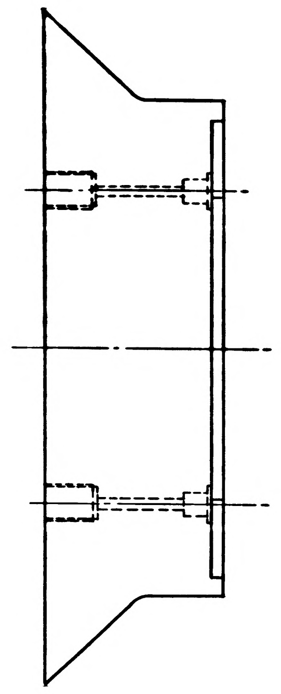
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±2°	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
	DRAWN M. Graham DATE 2-4-66 CHECKED R. Manning 3 Feb 66 APPROVAL CONTRACT NAS 9-497	CROWN HALF, UPPER, SEXTANT COVER		
DO NOT SCALE THIS DRAWING				
MATERIAL SEE NOTE 2	NASA APPROVAL 2/30/66	SIZE E	CODE IDENT NO. 99974	1021320
APPROVAL	AC APPROVAL 2/3/66	SCALE FULL		SHEET OF

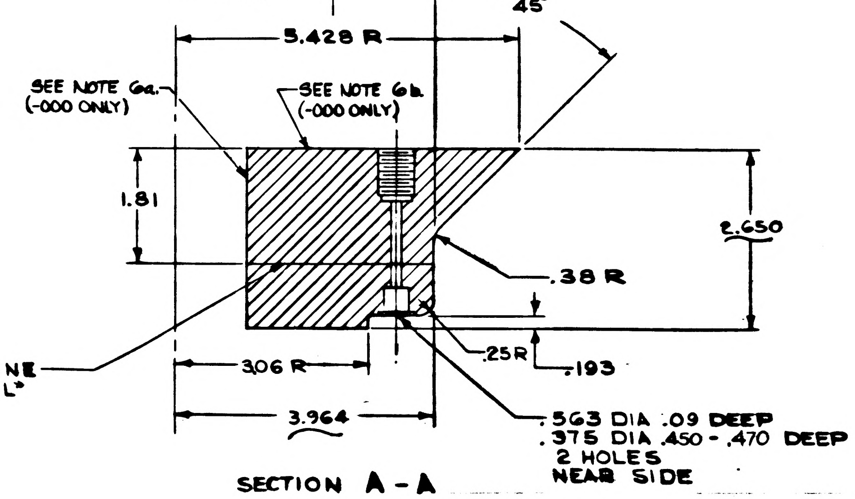
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: 1008905-001, -002, OR -003.
3. IF OPTIONAL BOND LINE IS USED, BOND WITH SCD-1008904 UNDER CONTACT PRESSURE OF 10 PSI MINIMUM AND CURE FOR 1½ HOURS MIN. AT 350°±5°F.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. FINISH: SEALING AND PAINT REQUIREMENTS, APPLY SEALER ALL OVER PER ND1002328-001
   - 6a. APPLY BLACK COATING PER ND1002277 TO SPECIFIED SURFACES USING 1012543-001.
   - 6b. APPLY GRAY COATING TO SPECIFIED SURFACES PER ND1002328-002 USING 1008910.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	REVISED NOTE 4	[illegible]	4 Aug 66	[illegible]
	B	ADDED NOTE 6	DO 2236	15 Aug 66	UX
	C	REVISED PER ECM 214694		26 Aug 66	[illegible]
	D	INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	[illegible]
	E	REVISED PER TDRR 32328		[illegible]	[illegible]
	F	REVISED PER TDRR 33230		[illegible]	[illegible]


A
A
3.06 R
REF
4.950
℄
2.475
℄
.12
SEE NOTE 6a
(-000 ONLY)
.18 R
2 PLACES
.156 DIA THRU
.500 DIA .800-.820 DEEP
9/16-12 UNC-2B .75 DEEP
2 HOLES NEAR SIDE
1.125
1.90
2.475




45°
5.428 R
SEE NOTE 6a
(-000 ONLY)
SEE NOTE 6b
(-000 ONLY)
1.81
2.650
.38 R
BOND LINE
"OPTIONAL"
3.06 R
.25R
.193
3.964
.563 DIA .09 DEEP
.375 DIA .450-.470 DEEP
2 HOLES
NEAR SIDE

SECTION A-A

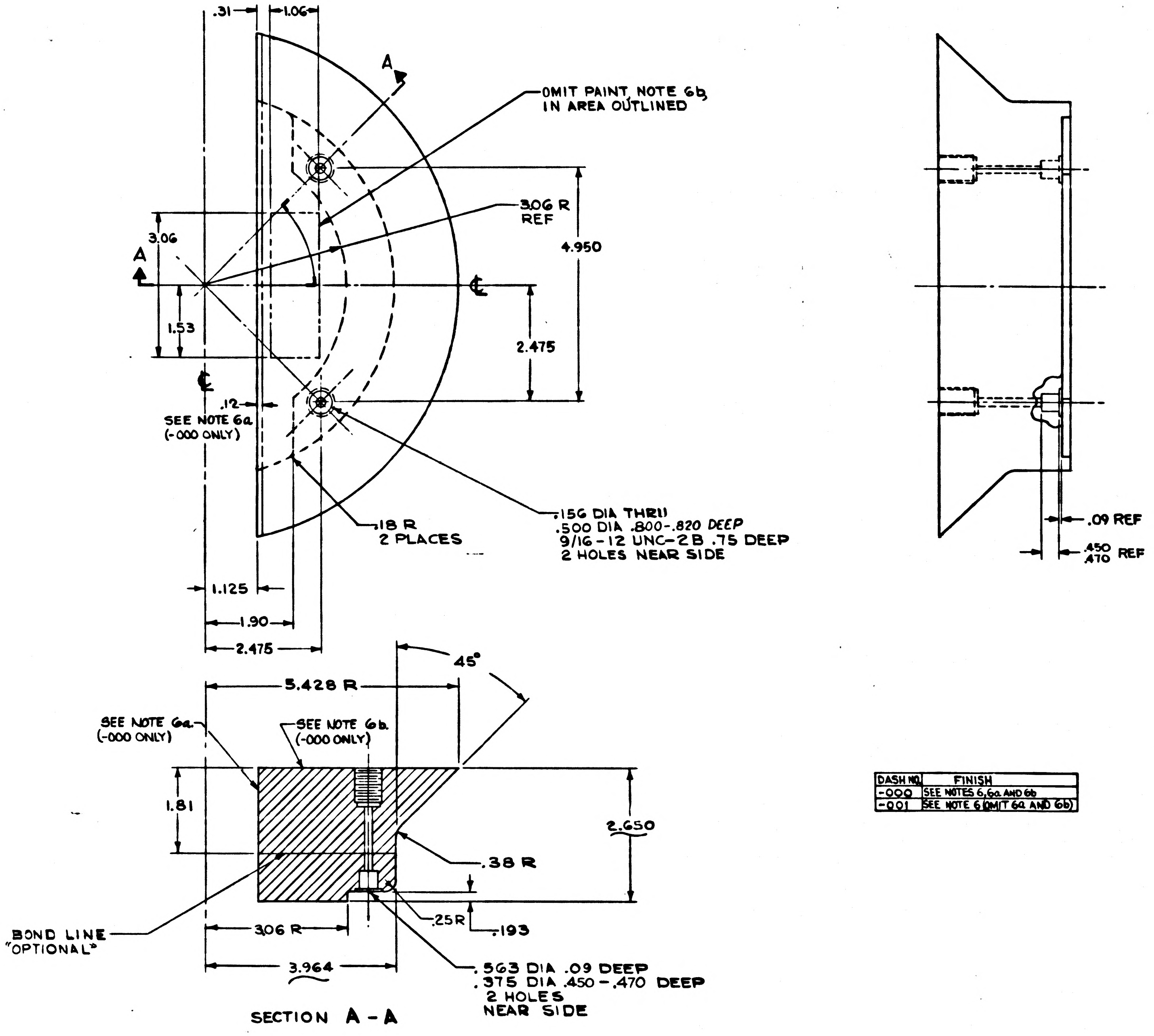
DASH NO.	FINISH
-000	SEE NOTES 6, 6a AND 6b
-001	SEE NOTE 6 (OMIT 6a AND 6b)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±2°	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN M. Graham DATE 2-4-66 CHECKED Manning 3-4-66 APPROVAL CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS CROWN HALF, UPPER, SEXTANT COVER
DO NOT SCALE THIS DRAWING MATERIAL SEE NOTE 2	NASA APPROVAL APPROVAL	SIZE E CODE IDENT NO. 99974 1021320
APPROVAL		SCALE FULL SHEET OF

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	REVISED NOTE 4	2CN4415	4 Aug 66	
	B	ADDED NOTE 6	2202236	15 Aug	
	C	REVISED PER ECM 214694		22 Aug 66	
	D	INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	
	E	REVISED PER TDRR 32328			
	F	REVISED PER TDRR 33220			
	G	REVISED PER TDRR [illegible]			
	H	REVISED PER TDRR 36852		24 SEP 68	

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: 1008905-001, -002, OR-003.
3. IF OPTIONAL BOND LINE IS USED BOND WITH SCD-1008904 UNDER CONTACT PRESSURE OF 10 PSI MINIMUM AND CURE FOR 1½ HOURS MIN. AT 350°±5°F.
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. FINISH: SEALING AND PAINT REQUIREMENTS, APPLY SEALER ALL OVER PER ND1002328-001
   - 6a. APPLY BLACK COATING PER ND1002277 TO SPECIFIED SURFACES USING 1012543-001.
   - 6b. APPLY GRAY COATING TO SPECIFIED SURFACES PER ND1002328-002 USING 1008910.



.31
1.06
A
OMIT PAINT NOTE 6b IN AREA OUTLINED
3.06 R REF
4.950
3.06
A
1.53
℄
2.475
℄
.12
SEE NOTE 6a (-000 ONLY)
.18 R 2 PLACES
.156 DIA THRU
.500 DIA .800-.820 DEEP
9/16-12 UNC-2B .75 DEEP
2 HOLES NEAR SIDE
1.125
1.90
2.475
.09 REF
.450 .470 REF
45°
5.428 R
SEE NOTE 6a (-000 ONLY)
SEE NOTE 6b (-000 ONLY)
1.81
2.650
.38 R
BOND LINE "OPTIONAL"
3.06 R
.25R
.193
3.964
.563 DIA .09 DEEP
.375 DIA .450-.470 DEEP
2 HOLES NEAR SIDE

SECTION A-A

DASH NO.	FINISH
-000	SEE NOTES 6, 6a AND 6b
-001	SEE NOTE 6 (OMIT 6a AND 6b)

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE, WIS.
DRAWN M. Graham DATE 2-4-66
CHECKED D. Manning 3-4-66
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL
APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

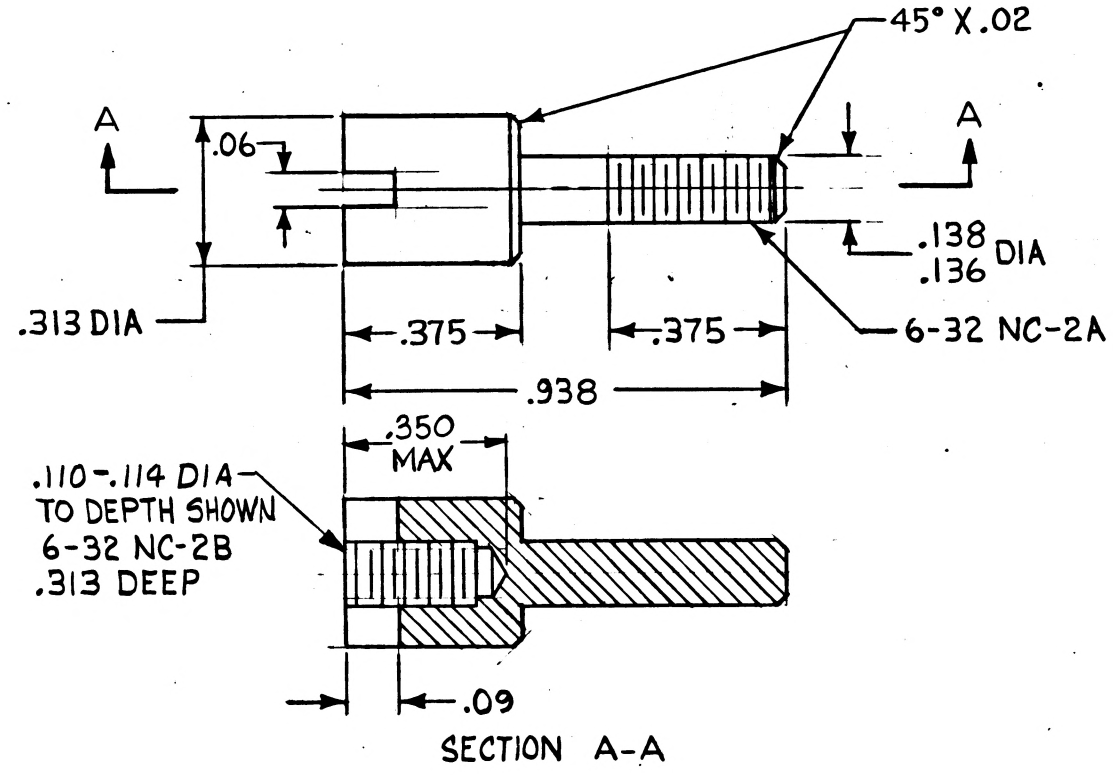
CROWN HALF, UPPER, SEXTANT COVER

SIZE E
CODE IDENT NO. 99974
1021320
SCALE FULL
SHEET OF

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: SST PER QQ-S-763, CLASS 302 OR 304 COND A, CF.
3. PASSIVATE PER MIL-F-14072, FINISH E-300
4. UNLESS OTHERWISE SPECIFIED:
    A. SURFACE ROUGHNESS MUST NOT EXCEED 63/.
    B. ALL CORNERS MUST BE .005 TO .015R OR CHAMFER.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. MUST BE FREE FROM BURRS.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	CLASS 302 OR 304 WAS 302	D062234	15 AUG 66	DK
	B	.110-.114 DIA .350 DP. WAS ---- .250 DP.	D.D.62240	18 AUG 66	DK
	C	INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	8-30



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN Dobbert DATE 1 AUG 66
CHECKED Fesler 3 AUG 66
APPROVAL 18 AUG 66
CONTRACT NAS 9-497
NASA APPROVAL 8/29/66
AC APPROVAL 8/30/66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

SCREW, SLOTTED, SPECIAL
SEXTANT COVER

SIZE C
CODE IDENT NO. 99974
1021326
SCALE 4:1
SHEET 1 OF 1

MIL-1052C P

D	1021329

NOTES:

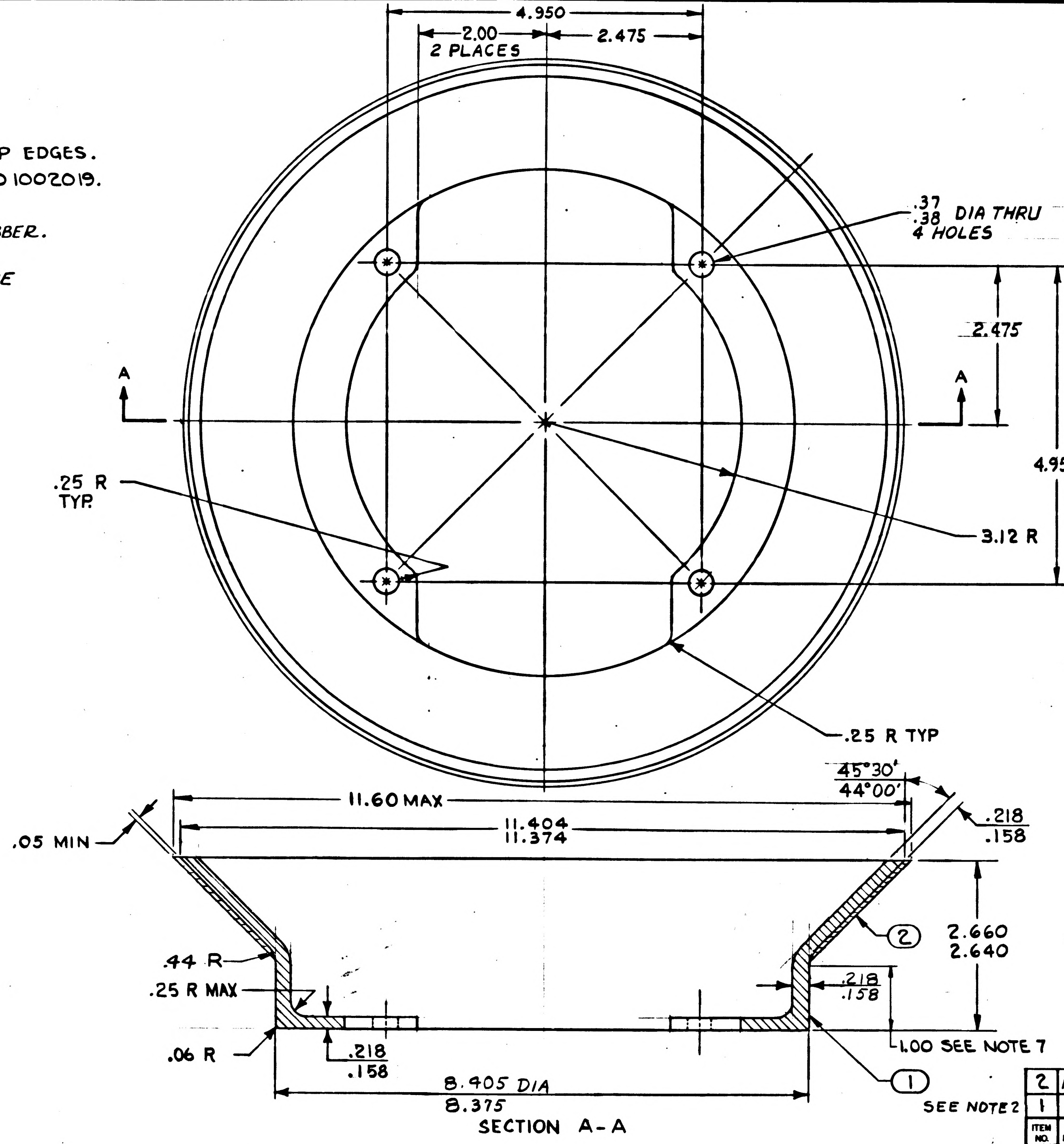
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ITEM ① TO BE PYROLYZED PLASTIC PER 1008908
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. IDENTIFY USING DRAWING NUMBER PER ND 1002019.

7. AREA INDICATED TO BE FREE OF SILICONE RUBBER.

8. APPLY ITEM ② TO ITEM ① IN ACCORDANCE WITH ND1002329-003.

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		REVISED NOTE 3. ADDED NOTES 5 AND 6. DIM. .05 MIN WAS .077/.047. ADDED DIM. 11.60 MAX. DIM 11.404/11.374 WAS 11.419/11.389. .37/.38 DIA THRU WAS .375 DIA THRU.	D.O. 62215	4 Aug 1966	SJD
B		ADDED NOTE 7 AND 1.00 DIM	DO 62239	16 AUG 66	LGC
C		REVISED PER ECM 214696		26 AUG 66	WD
D		INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	



4.950
2.00
2 PLACES
2.475
.37
.38 DIA THRU
4 HOLES
2.475
A
A
4.950
.25 R
TYP.
3.12 R
.25 R TYP
45°30'
44°00'
11.60 MAX
11.404
11.374
.218
.158
.05 MIN
2
2.660
2.640
.44 R
.25 R MAX
.218
.158
1.00 SEE NOTE 7
.06 R
.218
.158
8.405 DIA
8.375
1
SEE NOTE 2
SECTION A-A

LIST OF PARTS AND MATERIALS

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
2	AR	1008906	SILICONE RUBBER
1	1	1021329-001	CROWN HALF

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±—
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN D Gobbert DATE 2AUG66
CHECKED Fogler 3AUG66
APPROVAL D.A. Kong 11 Aug 66
CONTRACT NAS 9-497
NASA APPROVAL 8/30/66
AC APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CROWN HALF, LOWER
SEXTANT COVER
(INSEPARABLE ASSEMBLY)

SIZE	CODE IDENT NO.	
D	99974	1021329

SCALE 1:1
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ITEM ① TO BE PYROLYZED PLASTIC PER 1008908
3. MUST BE FREE FROM BURRS AND SHARP EDGES.
4. IDENTIFY USING DRAWING NUMBER PER ND 1002019.

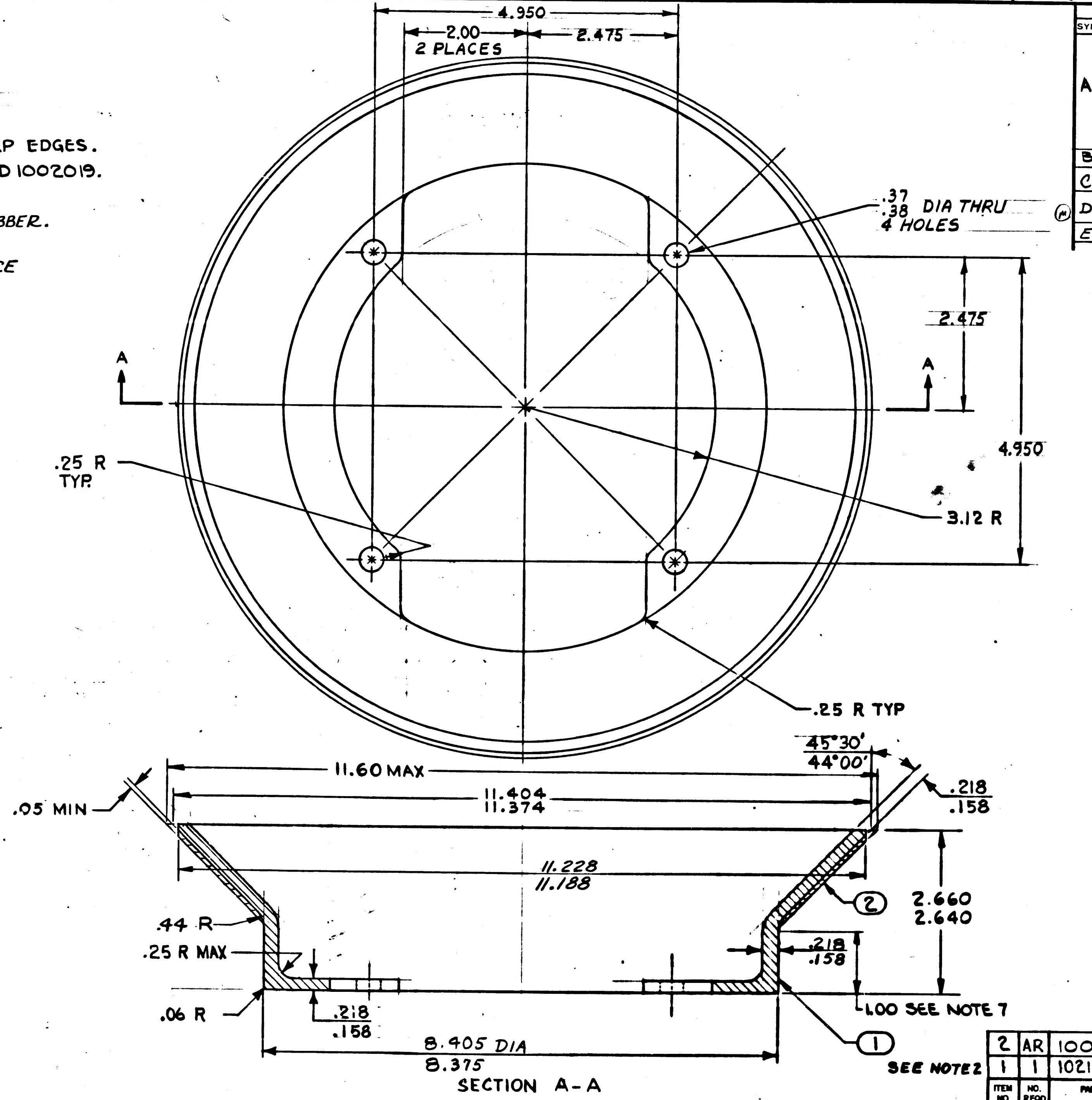
7. *AREA INDICATED TO BE FREE OF SILICONE RUBBER.*

8. *APPLY ITEM ② TO ITEM ① IN ACCORDANCE WITH ND1002329-003.*

E 1021329

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		REVISED NOTE 3. ADDED NOTES 5 AND 6. DIM. .05 MIN WAS .077/.047. ADDED DIM. 11.60 MAX. DIM 11.404/11.374 WAS 11.419/11.389. .37/.38 DIA THRU WAS .375 DIA THRU.	D.O. 62215	4 Aug 1966	
B		ADDED NOTE 7 AND 1.00 DIM	DO 62239	16 AUG 66	LGC
C		*REVISED PER ECM 214696*		26 AUG 66	
D		INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	
E		*REVISED PER TDRR 32252*		10 DEC 66	WK CP



4.950
2.00
2 PLACES
2.475
.37
.38 DIA THRU
4 HOLES
Ⓜ
2.475
A
A
4.950
.25 R
TYP.
3.12 R
.25 R TYP
45°30'
44°00'
11.60 MAX
.05 MIN
11.404
11.374
.218
.158
11.228
11.188
2
2.660
2.640
.44 R
.25 R MAX
.218
.158
.06 R
.218
.158
1.00 SEE NOTE 7
1
8.405 DIA
8.375

SECTION A-A

SEE NOTE 2

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
2	AR	1008906	SILICONE RUBBER
1	1	1021329-001	CROWN HALF

LIST OF PARTS AND MATERIALS

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±—
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN D Abbott DATE 2AUG66
CHECKED Fowler 3AUG66
APPROVAL D.A. King 19Aug66
CONTRACT NAS 9-497
NASA APPROVAL
AC APPROVAL 08/30/66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

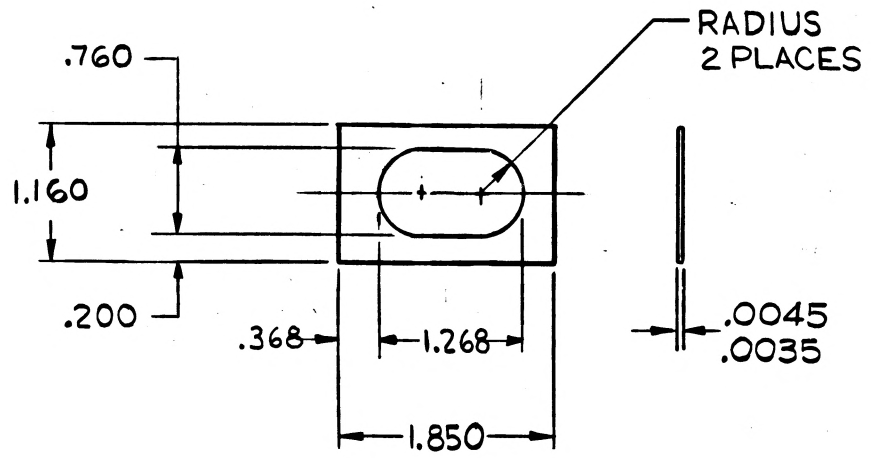
CROWN HALF, LOWER
SEXTANT COVER
(INSEPARABLE ASSEMBLY)

SIZE D
CODE IDENT NO. 99974
1021329
SCALE 1:1
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED $\overset{63}{\sqrt{}}$.
   B. ALL CORNERS MUST BE .005 TO .015R, OR CHAMFER.
3. MUST BE FREE FROM BURRS.
4. IDENTIFY USING DRAWING NUMBER PER ND1002019.
5. MATERIAL: STAINLESS STEEL PER QQ-S-766 CLASS 302 OR 304, COND A SOFT, CF
6. FINISH: PASSIVATE PER MIL-F-14072 FIN E 300.

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	SLOT REDIMENSIONED	D.O.62215	4 Aug 1966	
	B	CLASS 302 OR 304 WAS 302	D.O.62234	15 AUG 66	
	C	INITIAL RELEASE CLASS A PER TDRR 30861		30 AUG '66	8-30



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± .010 ANGLES ± —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN E. Miller DATE 3 AUG 66 CHECKED 3 AUG '66 APPROVAL D A King 18 AUG 66 CONTRACT NAS9-497	SHIELD, LIGHT TELESCOPE COVER
MATERIAL SEE NOTE 5	NASA APPROVAL 8/31/66	SIZE C · CODE IDENT NO. 99974 · 1021333
APPROVAL	AC APPROVAL 8/30/66	SCALE 1:1 · SHEET 1 OF 1

NEXT ASSY	USED ON
APPLICATION	

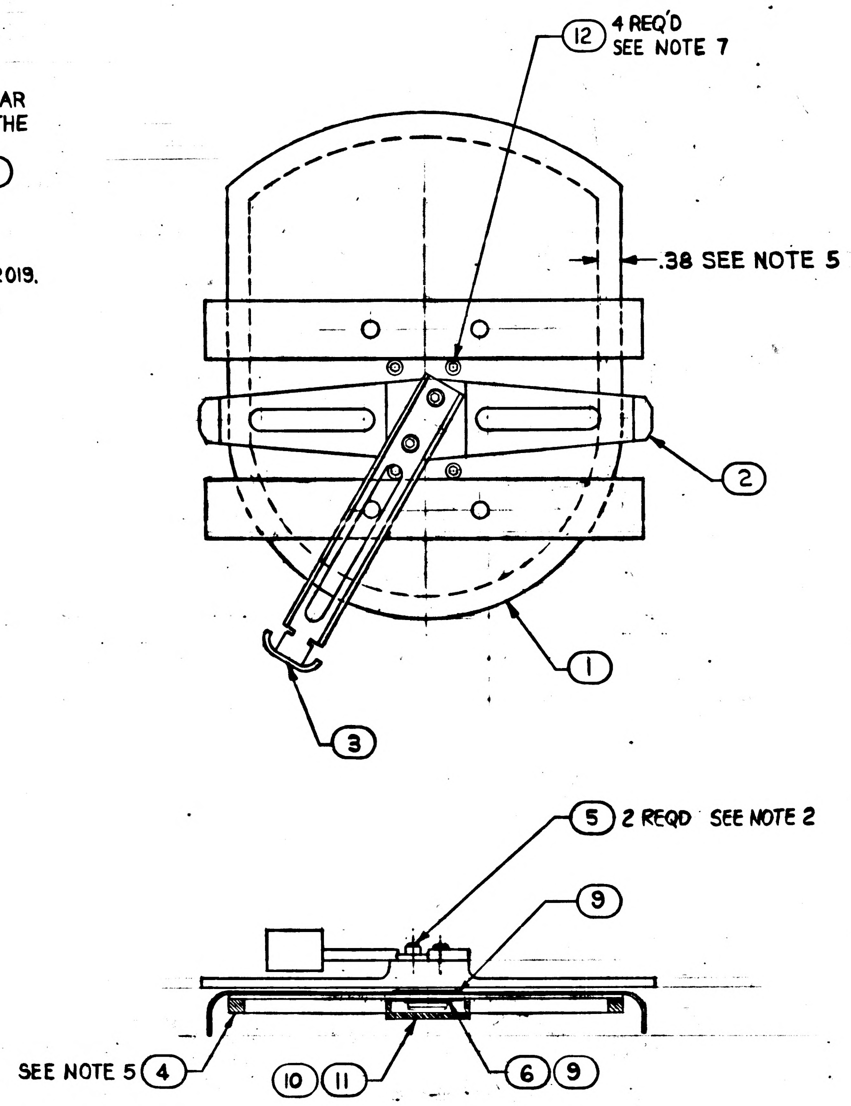
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1021352 B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. TORQUE ITEM (5) TO 4.5 - 5.5 POUND INCHES.
3. VENDOR ITEM - SEE SPECIFICATION CONTROL DWG.
5. APPLY A THIN FILM OF ITEM (8) TO AREA SHOWN FAR SIDE. ALLOW TO DRY (50 ±10 MINUTES). ACTIVATE THE ADHESIVE SURFACE BY BRUSHING WITH TT-M-261 METHYL-ETHYL-KETONE (MEK). ASSEMBLE ITEM (4) TO ITEM (1) IMMEDIATELY AFTER ACTIVATING THE SURFACE.
6. IDENTIFY USING DRAWING NUMBER, PREFIXED BY "ASSY," WITH APPLICABLE DASH NUMBER PER ND1002019.
7. TORQUE ITEM (12) TO 2.1 TO 2.3 POUND INCHES.

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		REVISED PER CM 216206		12 NOV 66	JWF EJ
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	[illegible] ES



SEE NOTE 3

QUANTITY REQUIRED				EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
			011				
			4		12	1000104-2	SCREW, FLAT HD SELF LOCKING
			1		11	1021381	GASKET
			1		10	1021380	COVER-CONTROL CAM
			2		9	1021370-001	SHIM-EJECTABLE DUST COVER
			AR		8	1016191	ADHESIVE
			1		6	MS16624-1050	RING, RETAINING-EXT.
			2		5	1001488-2	SCREW-HEX SOC HD
			1		4	1021357	GASKET-SCT COVER
			1		3	1021355	LEVER, ACTUATING-SCT COVER
			1		2	1021354	CAM, CONTROL-SCT COVER
			1		1	1021353	DUST COVER SCT (INSEP ASSY)

LIST OF PARTS AND MATERIALS

APPLICABLE DASH NO.	NEXT ASSY	USED ON
	1021373-041	
-011	1021373-031	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —

DO NOT SCALE THIS DRAWING

MATERIAL

APPROVAL Clementine
19 OCT 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN J. Parks DATE 22 SEP 66
CHECKED W. Biell 19 Oct. '66
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL A. C. M
CCB APPROVAL [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

DUST COVER ASSEMBLY,
SCT

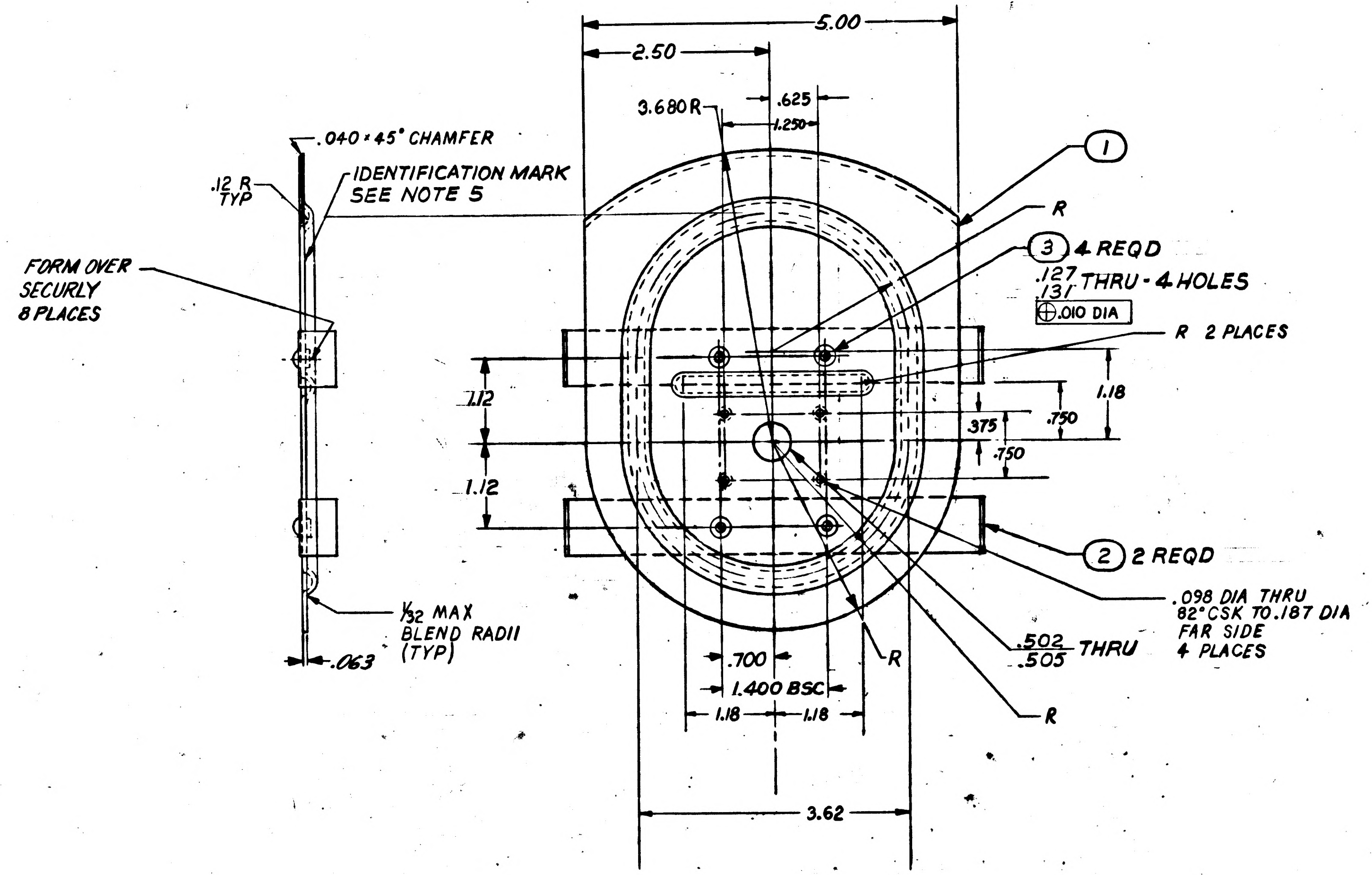
SIZE D
CODE IDENT NO. 80230
1021352
SCALE FULL
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPROVED
	A	REVISED PER ECM 216207		12 NOV 66	JRK EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	JRK EG

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/8 TEMPER H34 (AL ALY 5052).
3. FINISH: ANODIZE PER MIL-A-8625, TYPE I. (GREY ANODIZE)
4. MUST BE FREE FROM BURRS AND SHARP CORNERS.
5. IDENTIFY USING DRAWING NUMBER PER ND 1002019.


.040 × 45° CHAMFER
.12 R TYP
IDENTIFICATION MARK SEE NOTE 5
FORM OVER SECURLY 8 PLACES
1/32 MAX BLEND RADII (TYP)
.063
5.00
2.50
3.680R
.625
1.250
①
R
③ 4 REQD
.127/.131 THRU - 4 HOLES
⊕ .010 DIA
R 2 PLACES
1.12
1.12
1.18
.375
.750
.750
② 2 REQD
.098 DIA THRU 82° CSK TO .187 DIA FAR SIDE 4 PLACES
.502/.505 THRU
R
R
.700
1.400 BSC
1.18
1.18
3.62

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3	4	MS 20450C8AD6	RIVET-TUBULAR (OVAL HEAD)
2	2	1021356	SPRING, FLAT-EJECTING SCT COVER
1	1	1021353-001	PLATE-SCT COVER (SEE NOTES 2&3)

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021352-011	1021373-041
1021352-011	1021373-031

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL 19 OCT 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN H. S. Mueller DATE 21 SEP 66
CHECKED W. Diehl 19 OCT 66
APPROVAL
CONTRACT NAS 9-497
NASA APPROVAL G. C. M
CCB APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

DUST COVER, SCT
(INSEPARABLE ASSEMBLY)

SIZE D
CODE IDENT NO. 80230
1021353
SCALE FULL
SHEET 1 OF 1

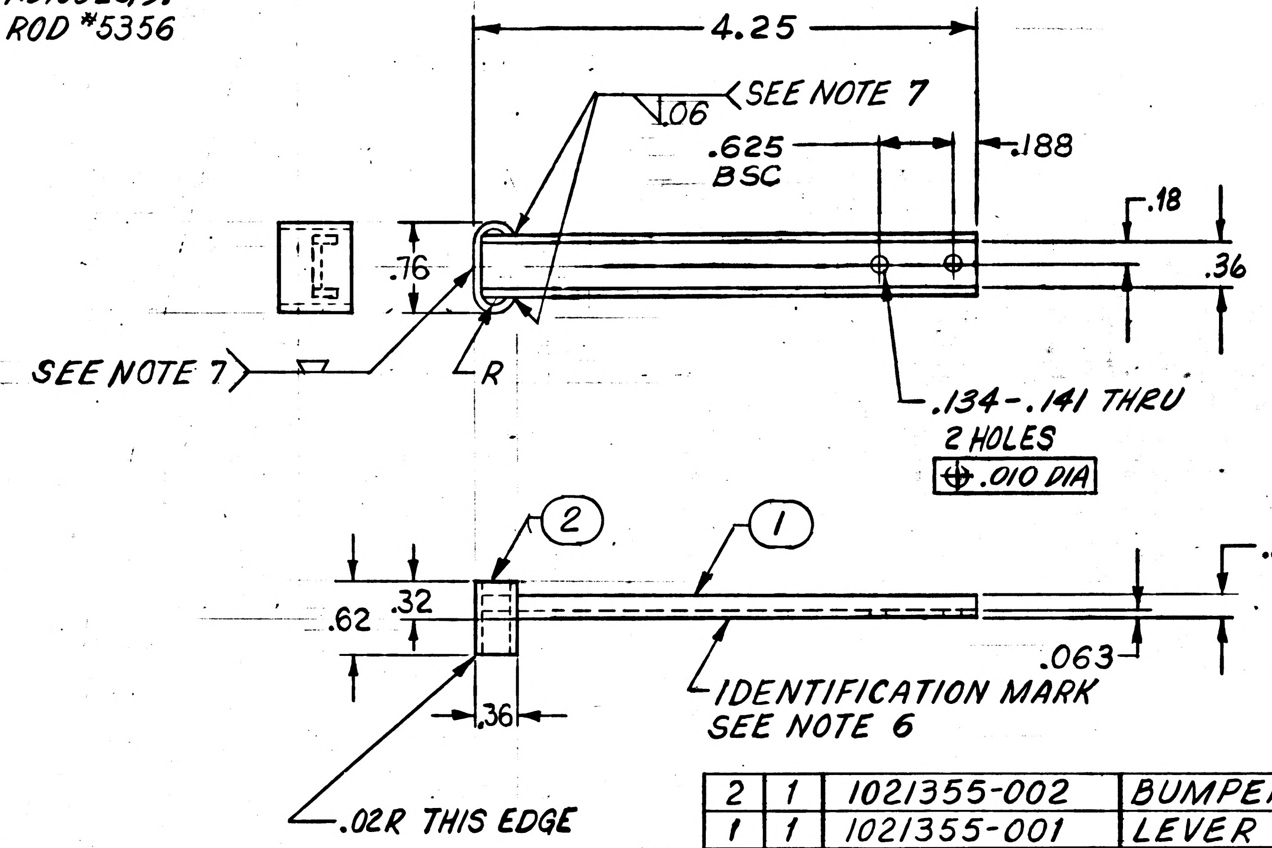
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISE PER ECM 216209		12 NOV 66	JIMP EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		2/1/66	DG EG

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/8, TEMPER H34 (AL ALY 5052)
3. FINISH: MIL-A-8625, TYPE 1, (GREY ANODIZE).
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. UNLESS OTHERWISE SPECIFIED:
   A. ALL INSIDE BEND RADII TO BE .06R MAX.
   B. ALL MACHINED CORNERS MUST BE .005 TO .015 R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. WELD PER MIL-W-8604 USING FILLER ROD #5356 PER QQ-R-566.



ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
2	1	1021355-002	BUMPER
1	1	1021355-001	LEVER

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021352-011	1021373-041
1021352-011	1021373-031

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES
± .02	± .005	± 2°

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

APPROVAL Charleston 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN T. Kosmatka DATE 17 SEP 66
CHECKED W. Dichl 5 Oct 66
APPROVAL G. Temple 12 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL A. C. M
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

LEVER, ACTUATING - SCT COVER
(INSEPARABLE ASSEMBLY)

SIZE C
CODE IDENT NO. 80230
1021355

SCALE FULL
SHEET 1 OF 1

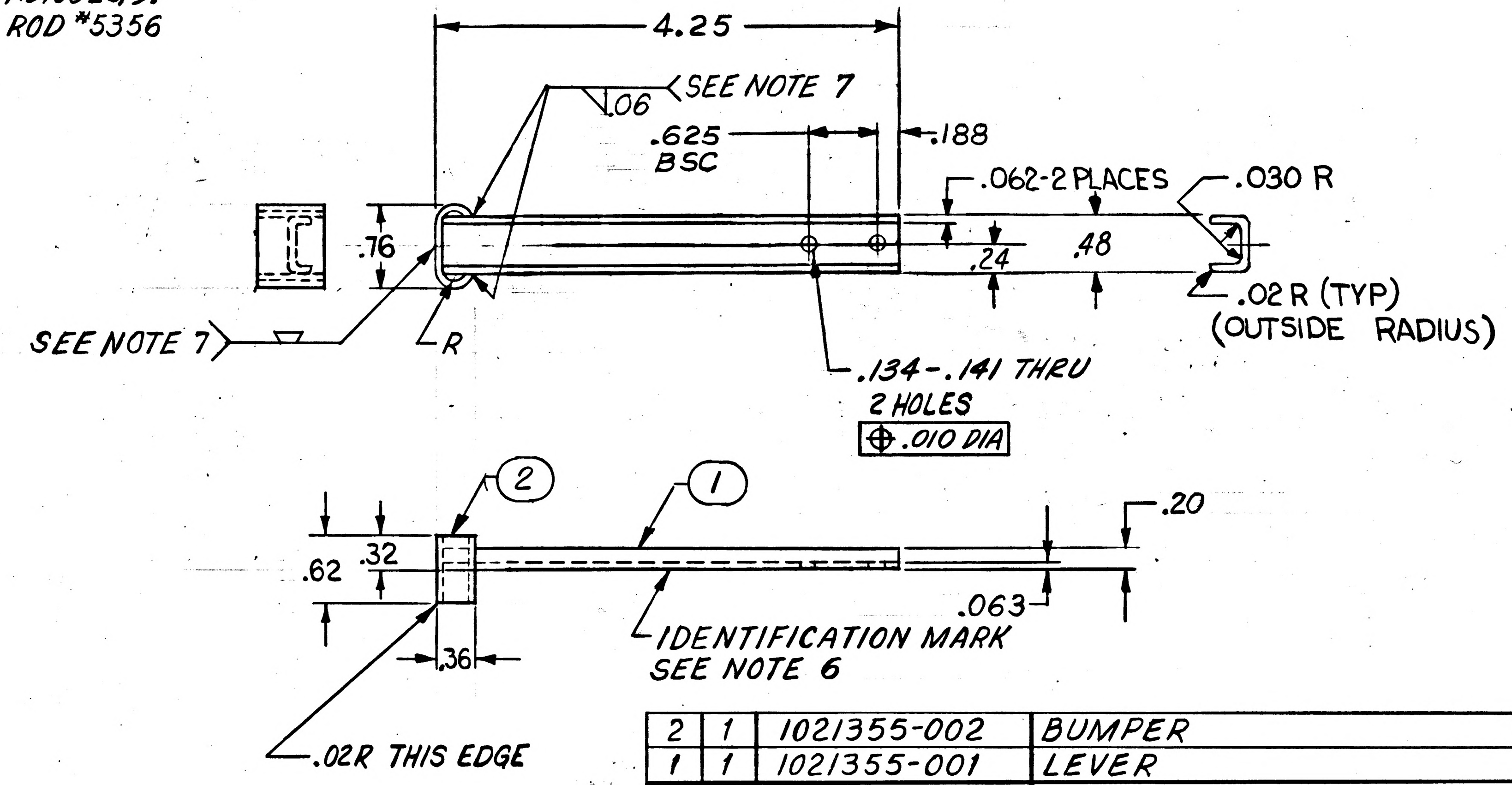
MIL-1052C P

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER. AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISE PER ECM 216209		12 NOV 66	JMP EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		9/11/66	DG EG
	C	REVISED PER TDRR 32918		16 FEB 67	DR n.W.

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/8, TEMPER H34 (AL ALY 5052)
3. FINISH: MIL-A-8625, TYPE 1, (GREY ANODIZE).
4. MUST BE FREE FROM BURRS AND SHARP EDGES.
5. UNLESS OTHERWISE SPECIFIED:
   - ~~A. ALL INSIDE BEND RADII TO BE .06R MAX.~~
   - B. ALL MACHINED CORNERS MUST BE .005 TO .015 R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.
7. WELD PER MIL-W-8604 USING FILLER ROD #5356 PER QQ-R-566.



ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
2	1	1021355-002	BUMPER
1	1	1021355-001	LEVER

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021352-011	1021373-041
1021352-011	1021373-031

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL Ch. [illegible] 19 Oct 66

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN T. Kosmatka DATE 19 SEP 66
CHECKED W. Duchl 5 Oct 66
APPROVAL G. Temple 12 O-6
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LEVER, ACTUATING-SCT COVER
(INSEPARABLE ASSEMBLY)

SIZE C
CODE IDENT NO. 80230
1021355
SCALE FULL
SHEET 1 OF 1

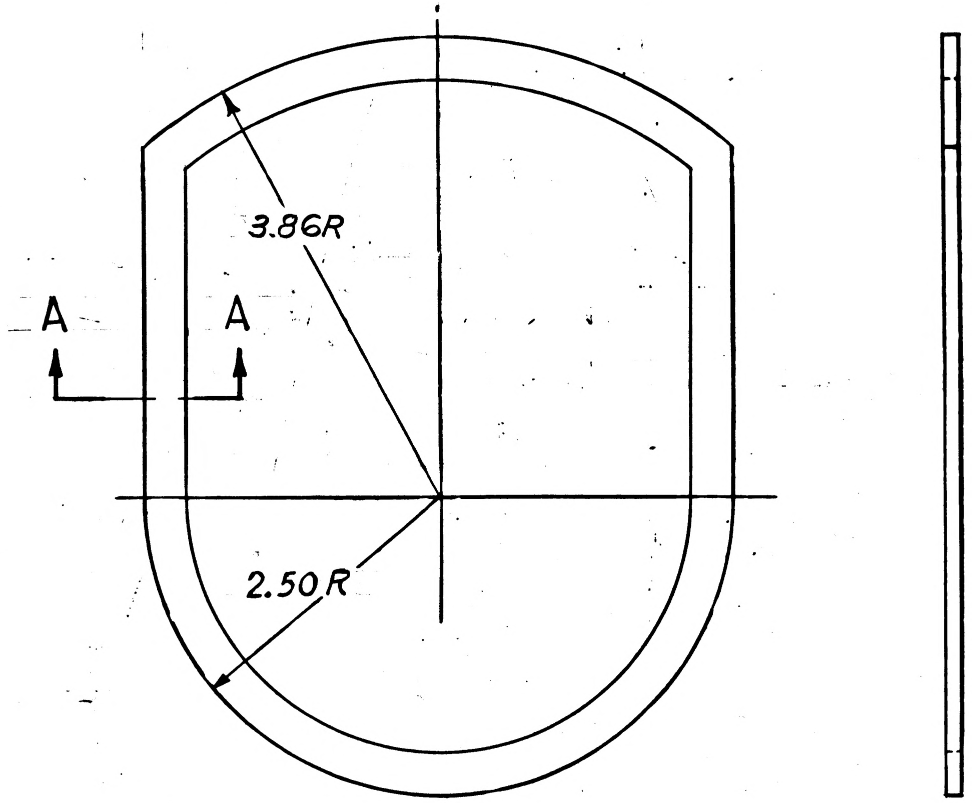
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

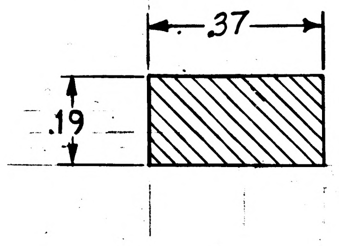
REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISED PER XCM 216210		12 NOV 66	DG EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	JRK EG

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER SCD 1008921. BAKE AT 25°F ± 5°F AND 10^{-4} TORR (MIN) FOR 24 HOURS (MIN).
3. MUST BE FREE FROM TEARS AND CREASES.
4. IDENTIFY USING DRAWING NUMBER PER ND1002019.





SECTION A-A
SCALE: 4:1

1021352-011	1021373-041
1021352-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL
19 OCT 66

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 16 SEP 66
CHECKED W. Diehl 5 OCT. 66
APPROVAL D. Temple 12 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GASKET-SCT COVER

SIZE C
CODE IDENT NO. 80230
1021357
SCALE FULL
SHEET 1 OF 1

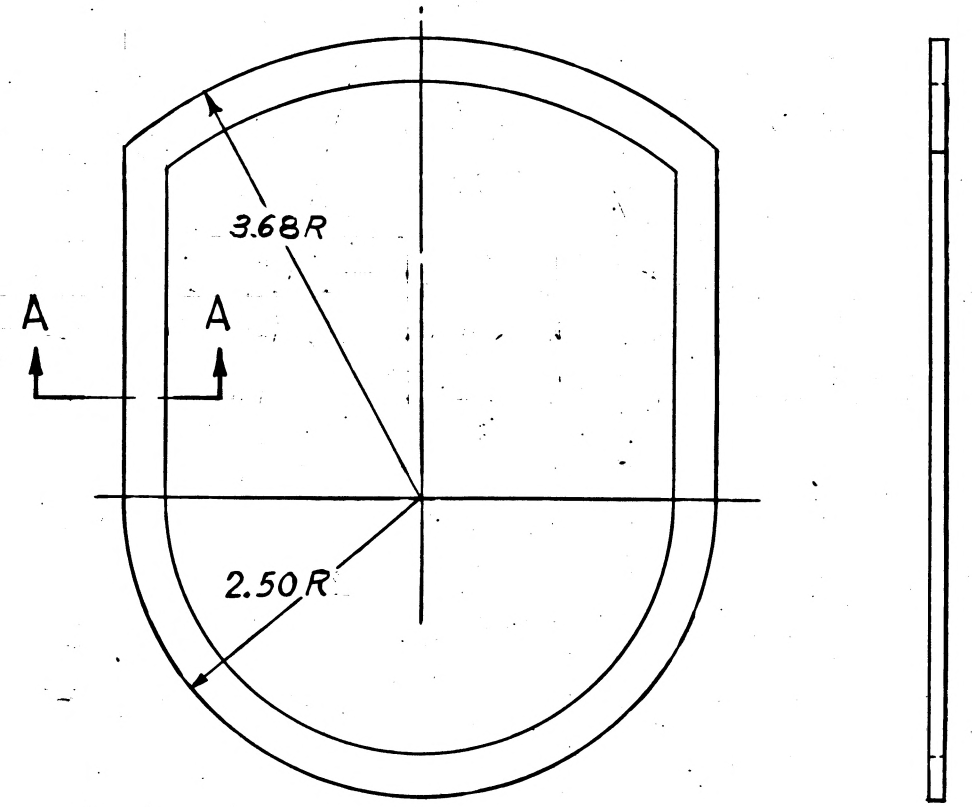
MIL-1052C P

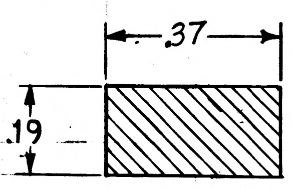
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISED PER XCM 216210		12 NOV -66	DG EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	JRK EG
	C	REVISED PER TDRR 32214		8 DEC 66	CP

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER SCD 1008921. BAKE AT 25°F ± 5°F AND 10^{-4} TORR (MIN) FOR 24 HOURS (MIN).
3. MUST BE FREE FROM TEARS AND CREASES.
4. IDENTIFY USING DRAWING NUMBER PER ND1002019.





SECTION A-A
SCALE: 4:1

1021352-011	1021373-041
1021352-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL [illegible] 19 OCT 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN [illegible] DATE 16 SEP 66
CHECKED W. Diehl 5 OCT. 66
APPROVAL B. Temple 12 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CASKET-SCT COVER

SIZE C
CODE IDENT NO. 80230
1021357
SCALE FULL
SHEET 1 OF 1

MIL-1052C P

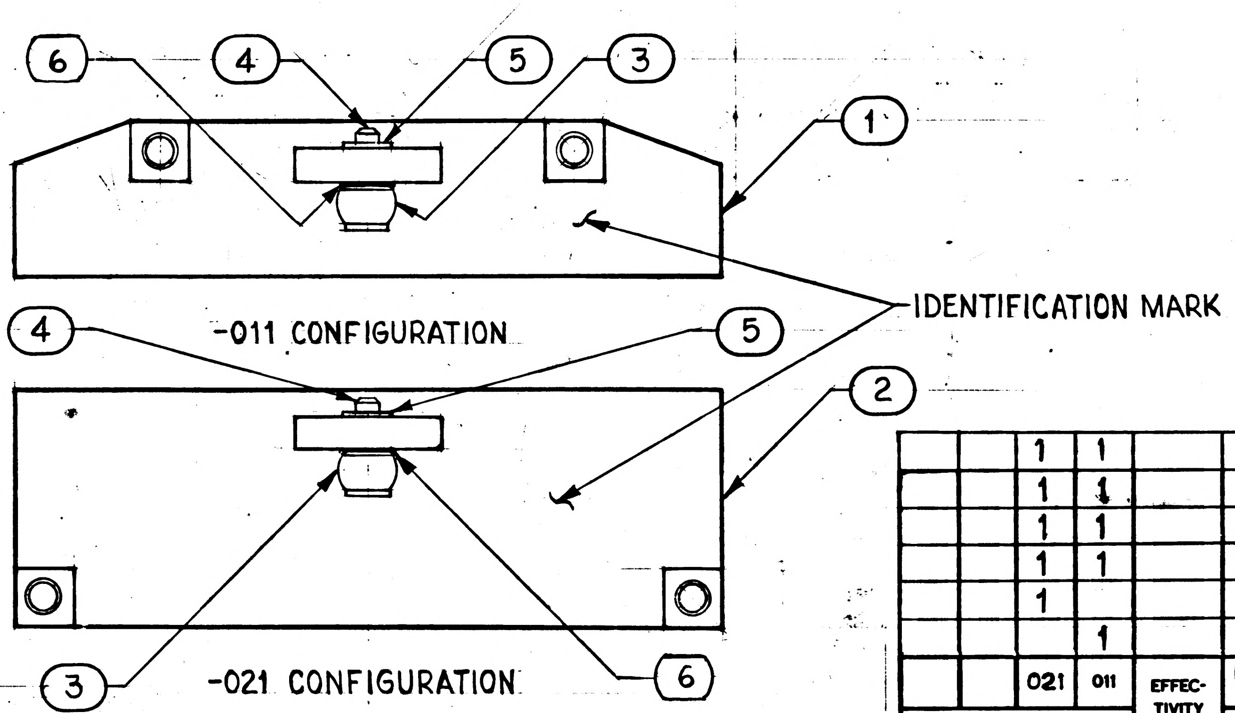
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISED PER ECM 216211		11-12-66	JPW EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		12/7/66	DG EG

NOTES:

1. INTERPRET DRAWING INACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING PART NUMBER, PREFIXED BY "ASSY," WITH APPLICABLE DASH NUMBER PER ND1002019.



					ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
		1	1		6	1021370-002	WASHER
		1	1		5	MS16633-1009	RING, RETAINING, EXTERNAL "E"
		1	1		4	1021360	PIN, GROOVED, HEADED
		1	1		3	1021359	BALL, LOCKING
		1			2	1021369	SUPPORT, LOCKING BALL-SXT COVER
			1		1	1021361	SUPPORT, LOCKING BALL-SCT COVER
		021	011	EFFECTIVITY			
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

APPLICABLE DASH NO.	NEXT ASSY	USED ON
	APPLICATION	
-021	1021373-041	
-011	1021373-041	
-021	1021373-031	
-011	1021373-031	

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± ___ 3 PLACE DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
APPROVAL 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN J. Parks DATE 15 OCT 66
CHECKED W. Diehl 18 Oct 66
APPROVAL R. Temple 19 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

RETAINER ASSEMBLY,
DUST COVER

SIZE C
CODE IDENT NO. 80230
1021358
SCALE 2:1
SHEET 1 OF 1

MIL-1052C P

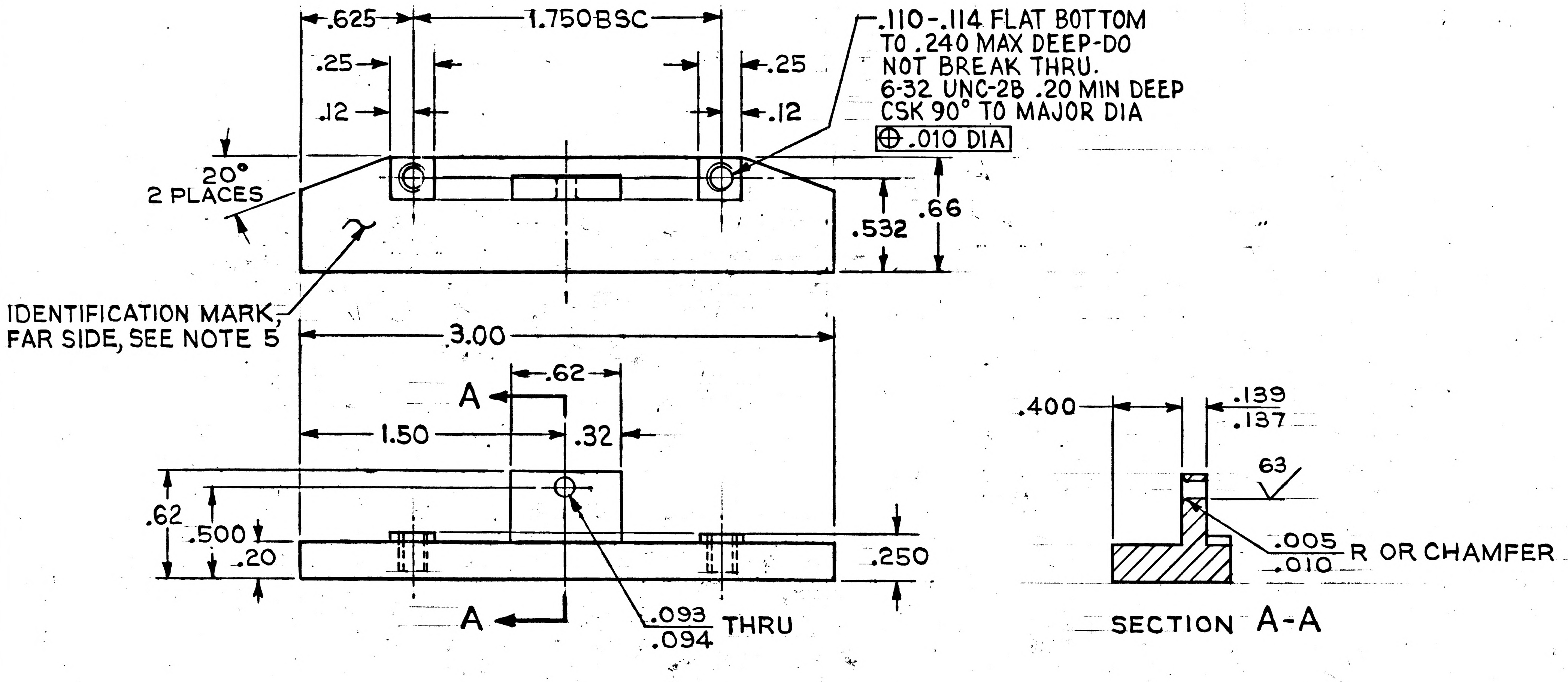
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION		DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202	CHG. NO.	12/1/66	

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/11 TEMPER T651 (AL ALY 6061)
3. FINISH: PER MIL-A-8625, TYPE I (GREY ANODIZE)
4. MUST BE FREE FROM BURRS.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED $\sqrt{}^{125}$.
   B. ALL CORNERS MUST BE .005 TO .015 R OR CHAMFER.


.625
1.750 BSC
.25
.12
.25
.12
.110-.114 FLAT BOTTOM TO .240 MAX DEEP-DO NOT BREAK THRU.
6-32 UNC-2B .20 MIN DEEP
CSK 90° TO MAJOR DIA
⊕ .010 DIA
20°
2 PLACES
.66
.532
IDENTIFICATION MARK, FAR SIDE, SEE NOTE 5
3.00
.62
A
1.50
.32
.62
.500
.20
.250
A
.093
.094 THRU
.400
.139
.137
63
.005
.010 R OR CHAMFER
SECTION A-A

1021358-011	1021373-041
1021358-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W.S. Mueller DATE 16 SEP 66
CHECKED W. Diehl 19 Oct. 66
APPROVAL R. Temple 19 Oct '66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

SUPPORT, LOCKING BALL-
SCT COVER

SIZE C
CODE IDENT NO. 80230
1021361
SCALE 2:1
SHEET 1 OF 1

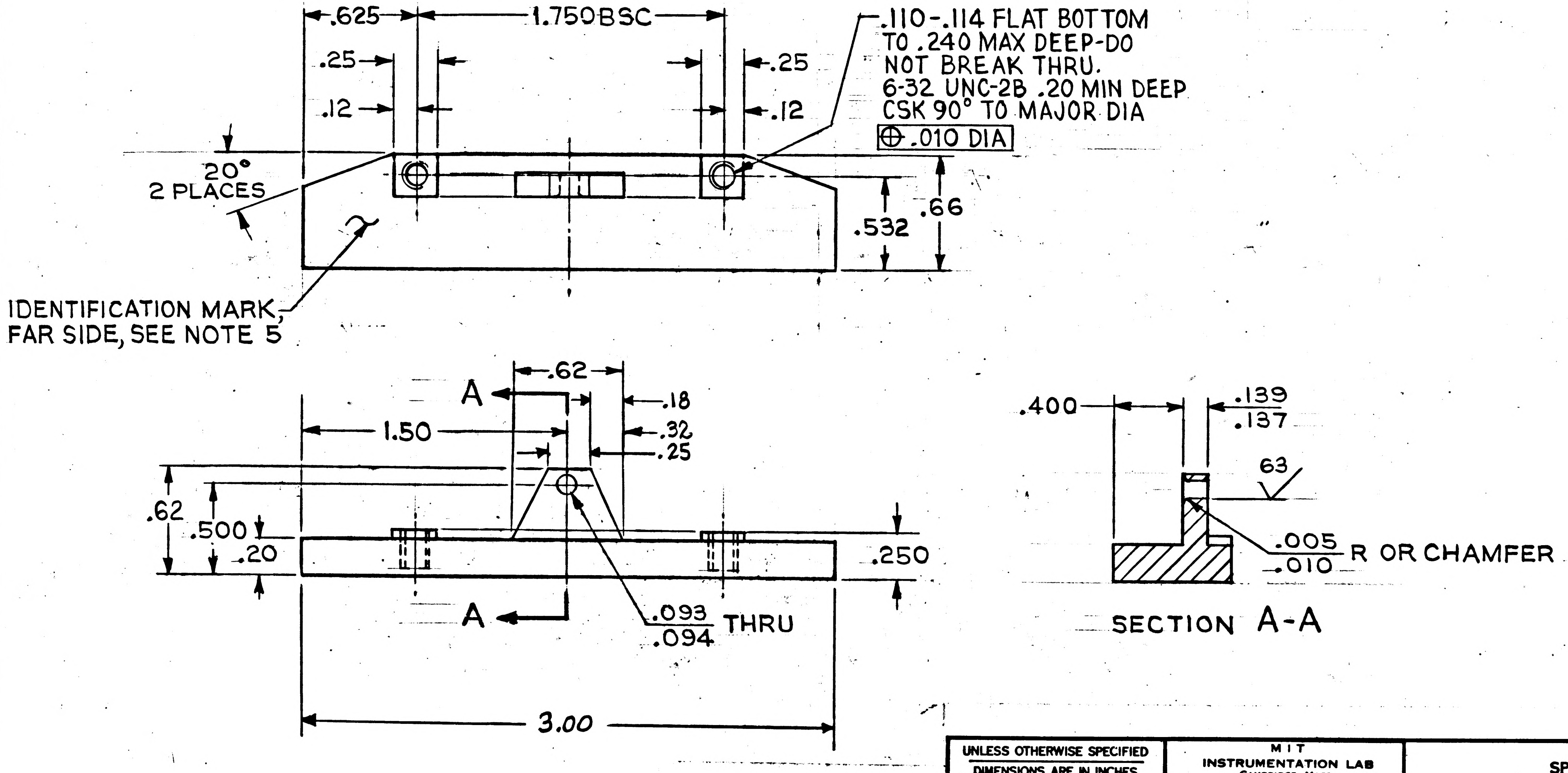
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	12/26/66
	B	CHANGED PER TDRR 32207		9 DEC 66	CP

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/11 TEMPER T651 (AL ALY 6061)
3. FINISH: PER MIL-A-8625, TYPE I (GREY ANODIZE)
4. MUST BE FREE FROM BURRS.
5. IDENTIFY USING DRAWING NUMBER PER ND1002019.
6. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED $\sqrt[125]{}$.
   B. ALL CORNERS MUST BE .005 TO .015 R OR CHAMFER.


.625
1.750 BSC
.25
.12
.25
.12
.110-.114 FLAT BOTTOM TO .240 MAX DEEP-DO NOT BREAK THRU.
6-32 UNC-2B .20 MIN DEEP
CSK 90° TO MAJOR DIA
⊕ .010 DIA
20° 2 PLACES
.532
.66
IDENTIFICATION MARK, FAR SIDE, SEE NOTE 5
A
.62
.18
1.50
.32
.25
.62
.500
.20
.250
A
.093 .094 THRU
3.00
.400
.139 .137
63
.005 .010 R OR CHAMFER
SECTION A-A

1021358-011	1021373-041
1021358-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL 19 OCT 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W. S. Mueller DATE 16 SEP 66
CHECKED W. Diehl 19 OCT. 66
APPROVAL R. Temple 19 OCT '66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

SUPPORT, LOCKING BALL-
SCT COVER

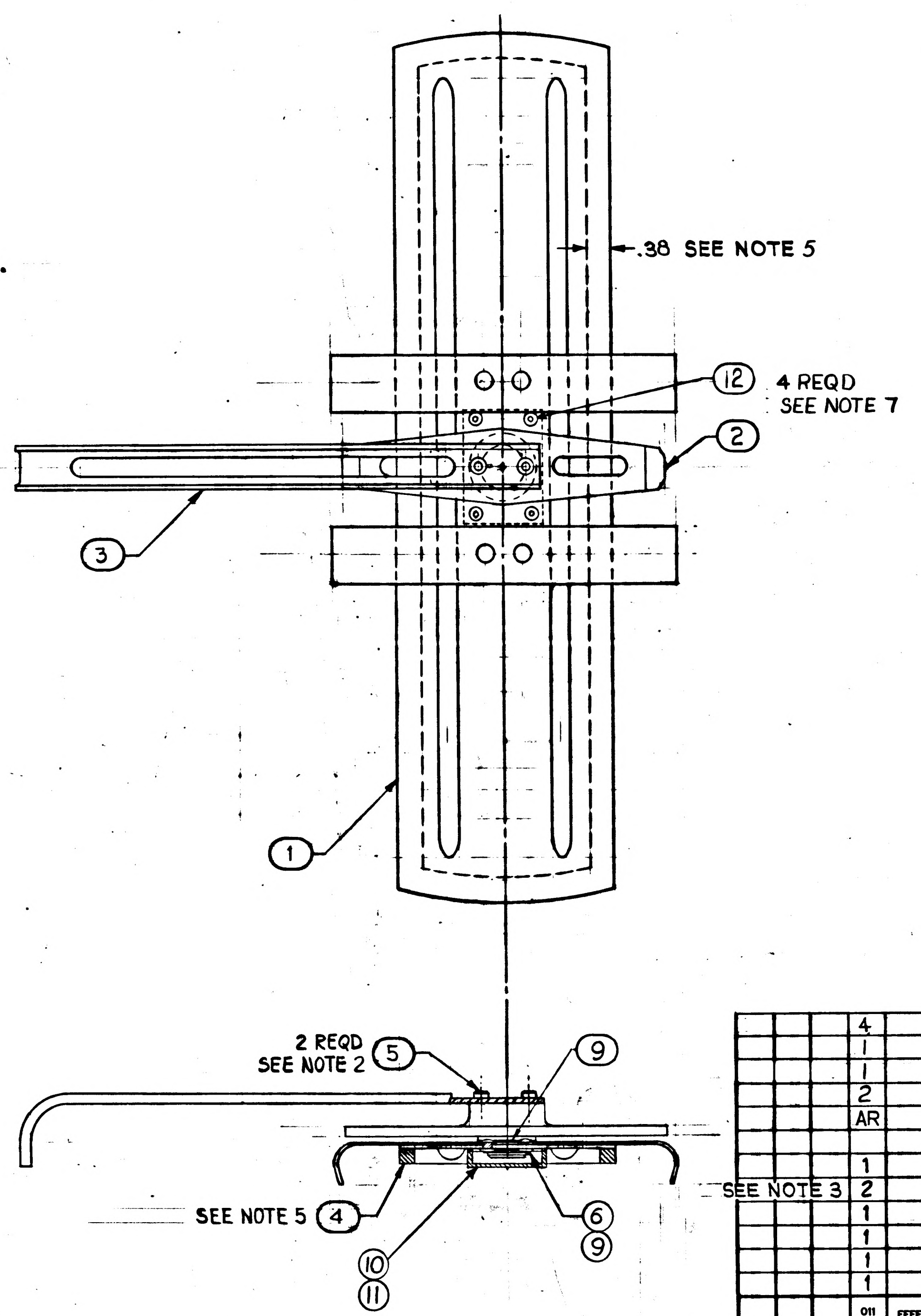
SIZE C
CODE IDENT NO. 80230
1021361
SCALE 2:1
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. TORQUE ITEM ⑤ TO 4.5 TO 5.5 POUND INCHES.
3. VENDOR ITEM - SEE SPECIFICATION CONTROL DWG.
5. APPLY A THIN FILM OF ITEM ⑧ TO AREA SHOWN, FAR SIDE. ALLOW TO DRY, (50 ± 10 MINUTES). ACTIVATE THE ADHESIVE SURFACE BY BRUSHING WITH TT-M-261 METHYL-ETHYL-KETONE (MEK). ASSEMBLE ITEM ④ TO ITEM ① IMMEDIATELY AFTER ACTIVATING THE ADHESIVE.
6. IDENTIFY USING DRAWING NUMBER, PREFIXED BY "ASSY," WITH APPLICABLE DASH NUMBER PER ND 1002019.
7. TORQUE ITEM ⑫ TO 2.1 TO 2.3 POUND INCHES.

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		REVISED PER ECM 216214		12 NOV 66	DG EG
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	JRK EG



			4		12	1000104-2	SCREW
			1		11	1021381	GASKET
			1		10	1021380	COVER
			2		9	1021370-001	SHIM
			AR		8	1016191	ADHESIVE
			1		6	MS16624-1050	RING, RETAINING-EXT
SEE NOTE 3			2		5	1001488-2	SCREW-HEX SOC HD
			1		4	1021367	GASKET-SXT COVER
			1		3	1021365	LEVER, ACTUATING-SXT COVER
			1		2	1021364	CAM, CONTROL-SXT COVER
			1		1	1021363	DUST COVER SXT (INSEP ASSY)
			011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
QUANTITY REQUIRED					LIST OF PARTS AND MATERIALS		

-011	1021373-041	
-011	1021373-031	
APPLICABLE DASH NO.	NEXT ASSY	USED ON
	APPLICATION	

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — −
3 PLACE DECIMALS + — −
ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL Charleston 19 OCT 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN J. Parks DATE 22 SEP 66
CHECKED W. Diell 19 OCT. '66
APPROVAL R. Temple 19 OCT '66
CONTRACT NAS 9-497
NASA APPROVAL G. C. [illegible]
CCB APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

DUST COVER ASSEMBLY, SXT

SIZE D
CODE IDENT NO. 80230
1021362
SCALE FULL
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

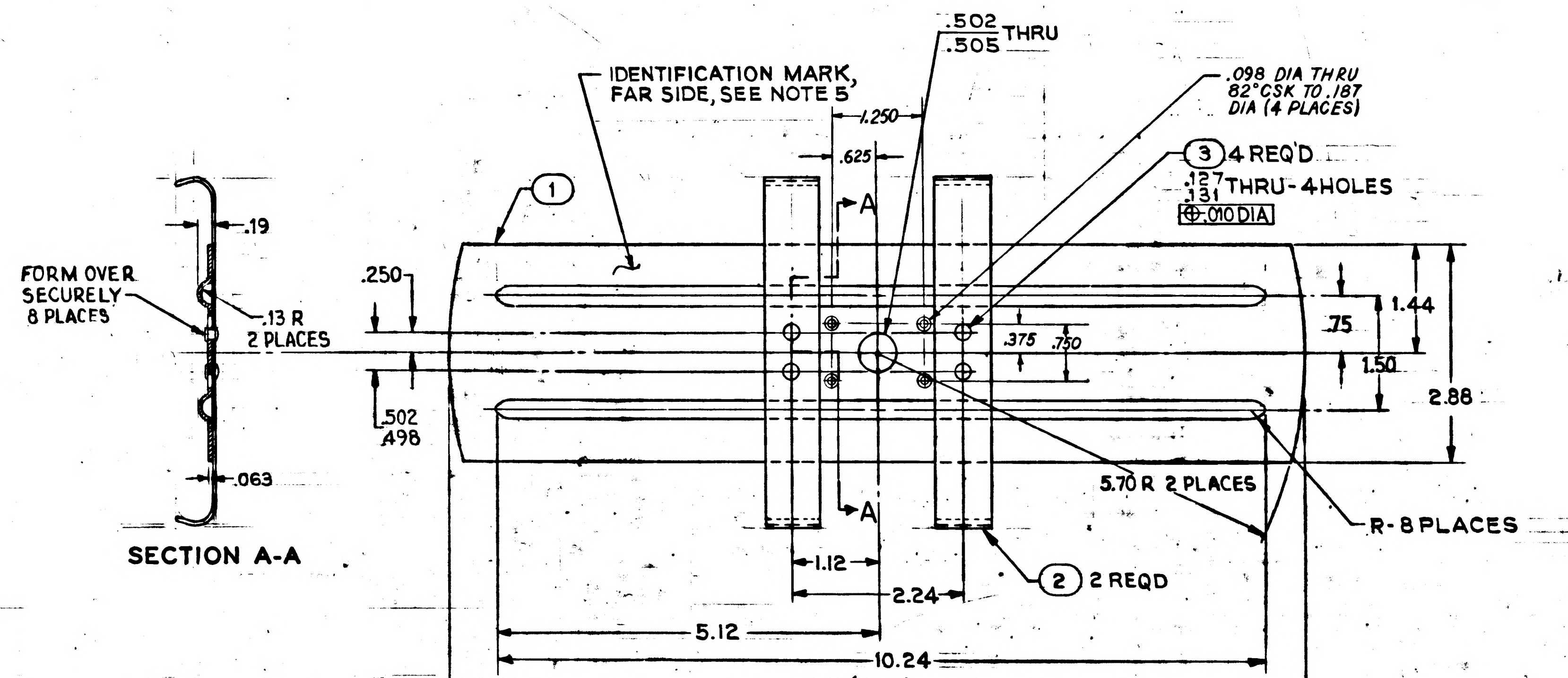
B | 1021363 | 2

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/8, TEMPER H34 (AL ALY 5052)
3. FINISH: ANODIZE PER MIL-A-8625, TYPE I. (GREY ANODIZE)
4. MUST BE FREE FROM BURRS AND SHARP CORNERS.
5. IDENTIFY USING PART NUMBER PER ND 1002019.

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		REVISED PER ECM 216215		12 NOV 66	JRK EG
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	JRK EG



.502
.505 THRU
IDENTIFICATION MARK, FAR SIDE, SEE NOTE 5
1.250
.625
A
.098 DIA THRU 82° CSK TO .187 DIA (4 PLACES)
③ 4 REQ'D
.127
.131 THRU - 4 HOLES
⊕ .010 DIA
①
.19
FORM OVER SECURELY 8 PLACES
.13 R 2 PLACES
.250
.375
.750
.75
1.44
1.50
2.88
.502
.498
.063
5.70 R 2 PLACES
R - 8 PLACES
SECTION A-A
1.12
2.24
② 2 REQD
5.12
10.24
11.40 (REF)

1021363

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
3	4	MS20450C8AD6	RIVET-TUBULAR (OVAL HEAD)
2	2	1021366	SPRING, FLAT-EJECTING, SXT COVER
1	1	1021363-001	PLATE-SXT COVER (SEE NOTES 2&3)

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1021362-011	1021373-041
1021362-011	1021373-031

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL Charleston 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN J. Parks DATE 22 SEP 66
CHECKED W. Diehl 19 OCT. 66
APPROVAL R. Temple 19 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL
CCB APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

DUST COVER, SXT
(INSEPARABLE ASSEMBLY)

SIZE D
CODE IDENT NO. 80230
1021363
SCALE FULL
SHEET 1 OF 1

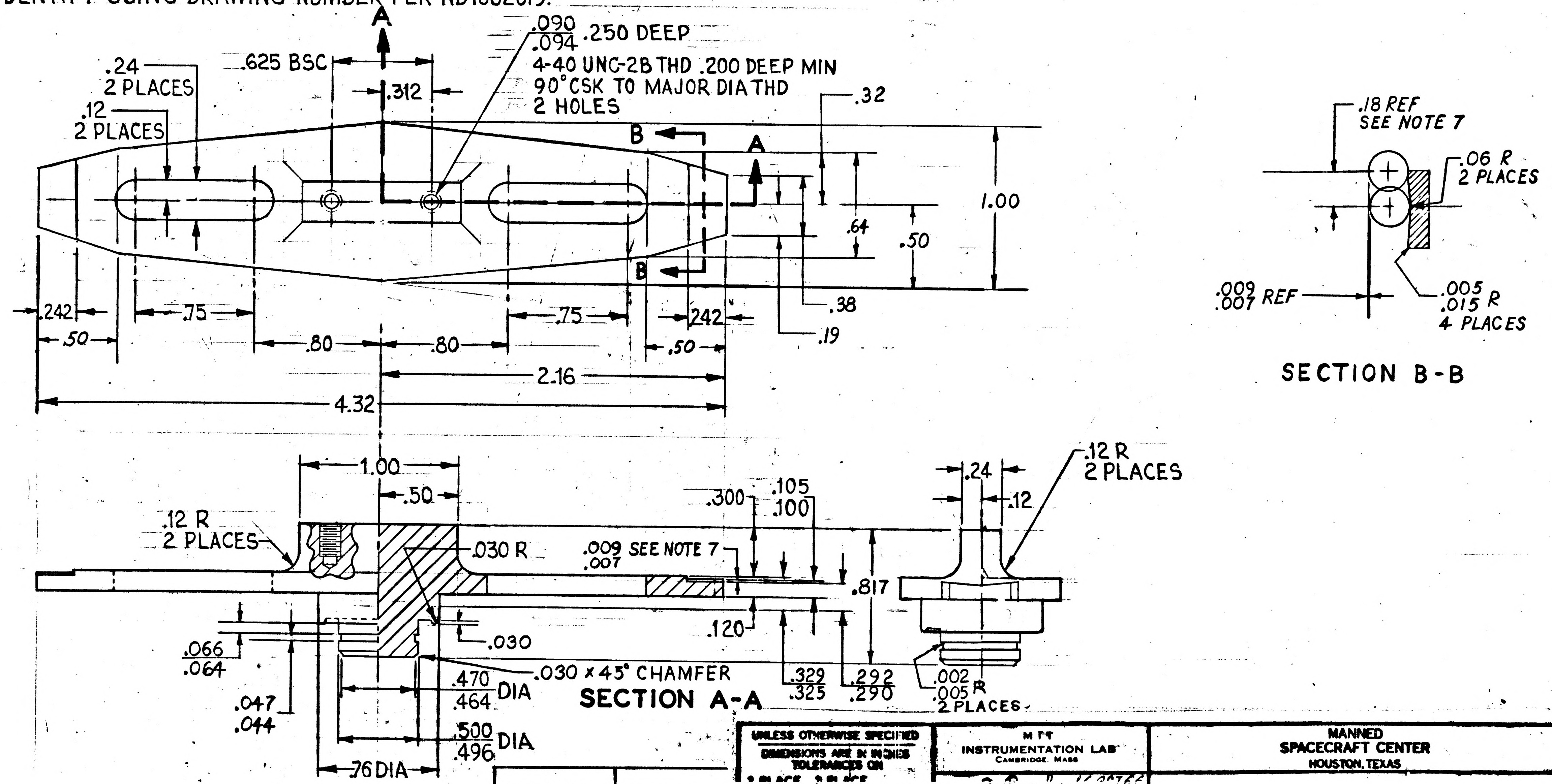
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISED PER ECM 216216		14 NOV 66	JRK EG
	B	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	JRK EG

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/11 TEMPER T651 (AL ALY 6061)
3. FINISH: PER MIL-A-8625 TYPE 1 (GREY ANODIZE).
4. MUST BE FREE FROM BURRS.
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125.
   B. ALL CORNERS MUST BE .005 TO .015 R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.


A
.090
.094
.250 DEEP
4-40 UNC-2B THD .200 DEEP MIN
90° CSK TO MAJOR DIA THD
2 HOLES
.24
2 PLACES
.12
2 PLACES
.625 BSC
.312
.32
B
A
B
1.00
.64
.50
.38
.19
.242
.50
.75
.80
.80
.75
.242
.50
2.16
4.32
.18 REF
SEE NOTE 7
.06 R
2 PLACES
.009
.007 REF
.005
.015 R
4 PLACES
SECTION B-B
1.00
.50
.12 R
2 PLACES
.030 R
.009
.007 SEE NOTE 7
.300
.105
.100
.817
.120
.030
.066
.064
.047
.044
.470
.464 DIA
.500
.496 DIA
.76 DIA
.030 x 45° CHAMFER
SECTION A-A
.329
.325
.292
.290
.002
.005 R
2 PLACES
.24
.12
.12 R
2 PLACES

7. DETERMINE .009/.007 DIM. BY MEASURING OVER A .2500 ± .0002 DIA. BALL OR ROD LOCATED .18 FROM VERTICAL CENTER LINE.

1021352-011	1021373-041
1021362-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL 19 OCT 66

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN J. Parks DATE 17 OCT 66
CHECKED W. Diehl 18 Oct. 66
APPROVAL G. Temple 19 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CAM, CONTROL-SXT COVER

SIZE C
CODE IDENT NO. 80230
1021364
SCALE 2:1
SHEET 1 OF 1

MIL-1052C P

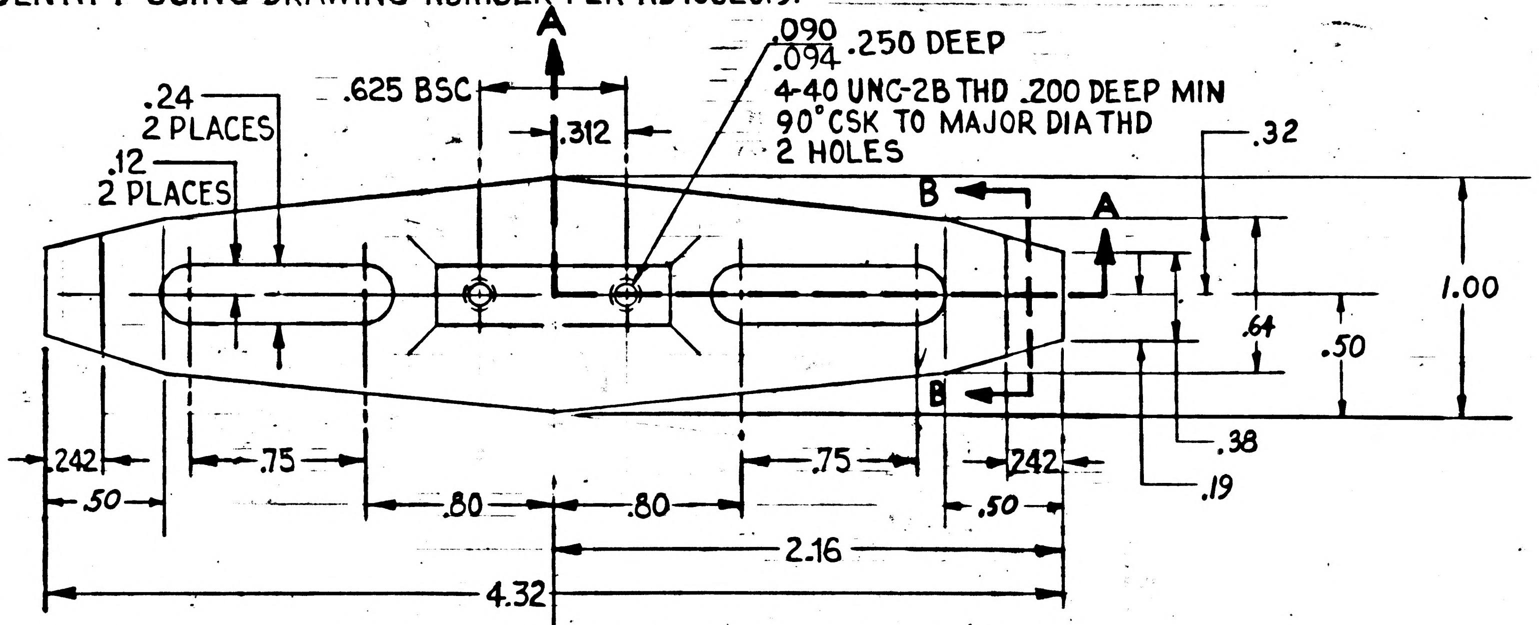
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	REVISED PER ECM 216216		14 NOV 66	JRK Eg
	B	INITIAL RELEASE CLASS A PER TDRR 32202		66	JRK Eg
	C	REVISED PER TDRR 33227		27 MAR 67	CFB EB

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/11 TEMPER T651 (AL ALY 6061)
3. FINISH: PER MIL-A-8625 TYPE 1 (GREY ANODIZE).
4. MUST BE FREE FROM BURRS.
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125√
   B. ALL CORNERS MUST BE .005 TO .015 R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.


A
.090
.094
.250 DEEP
4-40 UNC-2B THD .200 DEEP MIN
90° CSK TO MAJOR DIA THD
2 HOLES
.24
2 PLACES
.625 BSC
.312
.12
2 PLACES
B
A
B
.32
1.00
.64
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.19
.242
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.75
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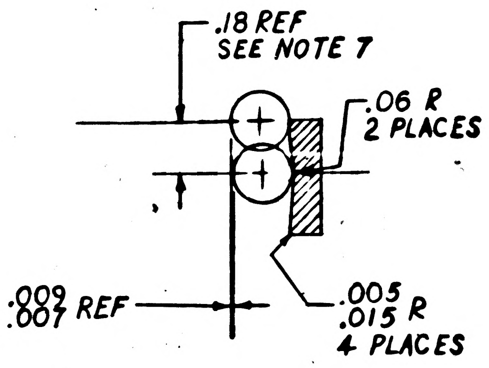
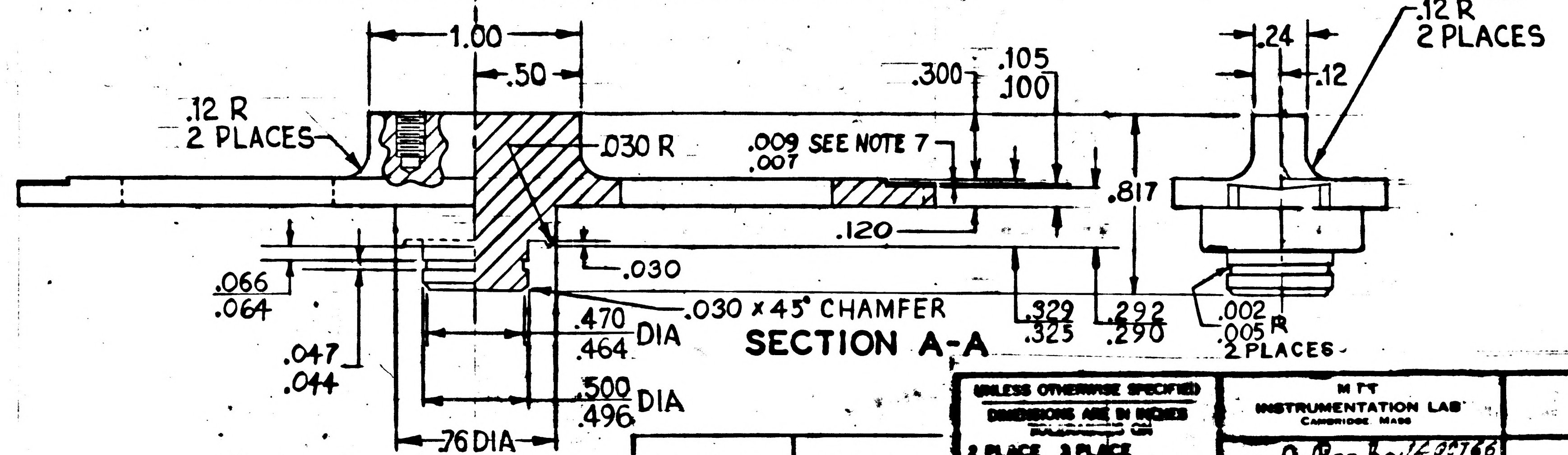
.80
.80
.50
2.16
4.32


.18 REF
SEE NOTE 7
.06 R
2 PLACES
.009
.007 REF
.005
.015 R
4 PLACES

SECTION B-B


1.00
.50
.12 R
2 PLACES
.030 R
.009
.007 SEE NOTE 7
.300
.105
.100
.817
.120
.030
.066
.064
.047
.044
.470
.464 DIA
.500
.496 DIA
.76 DIA
.030 x 45° CHAMFER
.329
.325
.292
.290
.24
.12
.12 R
2 PLACES
.002
.005 R
2 PLACES

SECTION A-A

7. DETERMINE .009/.007 DIM. BY MEASURING OVER A .2500 ± .0002 DIA. BALL OR ROD LOCATED .18 FROM VERTICAL CENTER LINE.

NEXT ASSY	USED ON
1021352-011	1021373-041
1021362-011	1021373-031

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN J. Parks 12 Oct 66
CHECKED W. Diehl 18 Oct. 66
APPROVAL 19 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CAM, CONTROL-SXT COVER

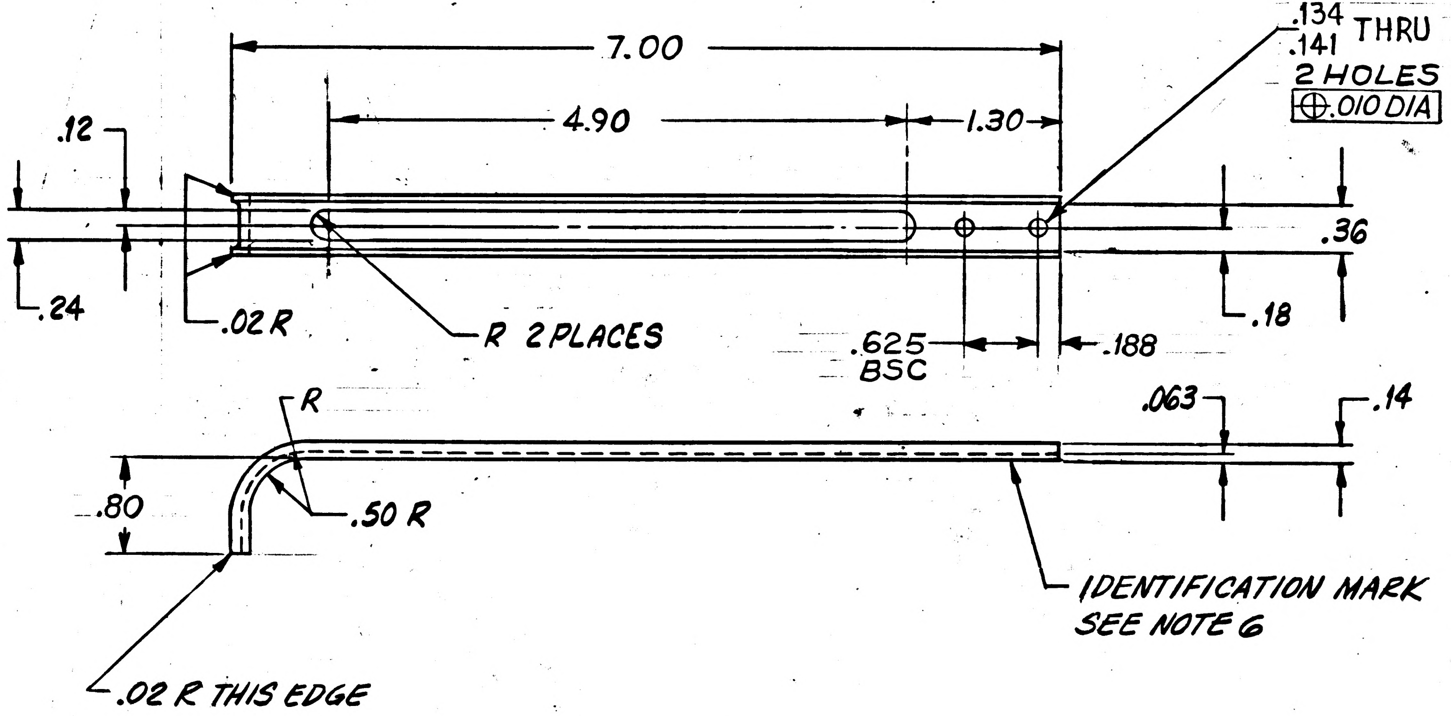
SIZE C
CODE IDENT NO. 80230
1021364
SCALE 2:1
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/11, TEMPER T651 (AL ALY 6061 T6)
3. FINISH: MIL-A-8625, TYPE 1 (ANODIZE).
4. MUST BE FREE FROM BURRS
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125√
   B. ALL CORNERS MUST BE .005 TO .015R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.



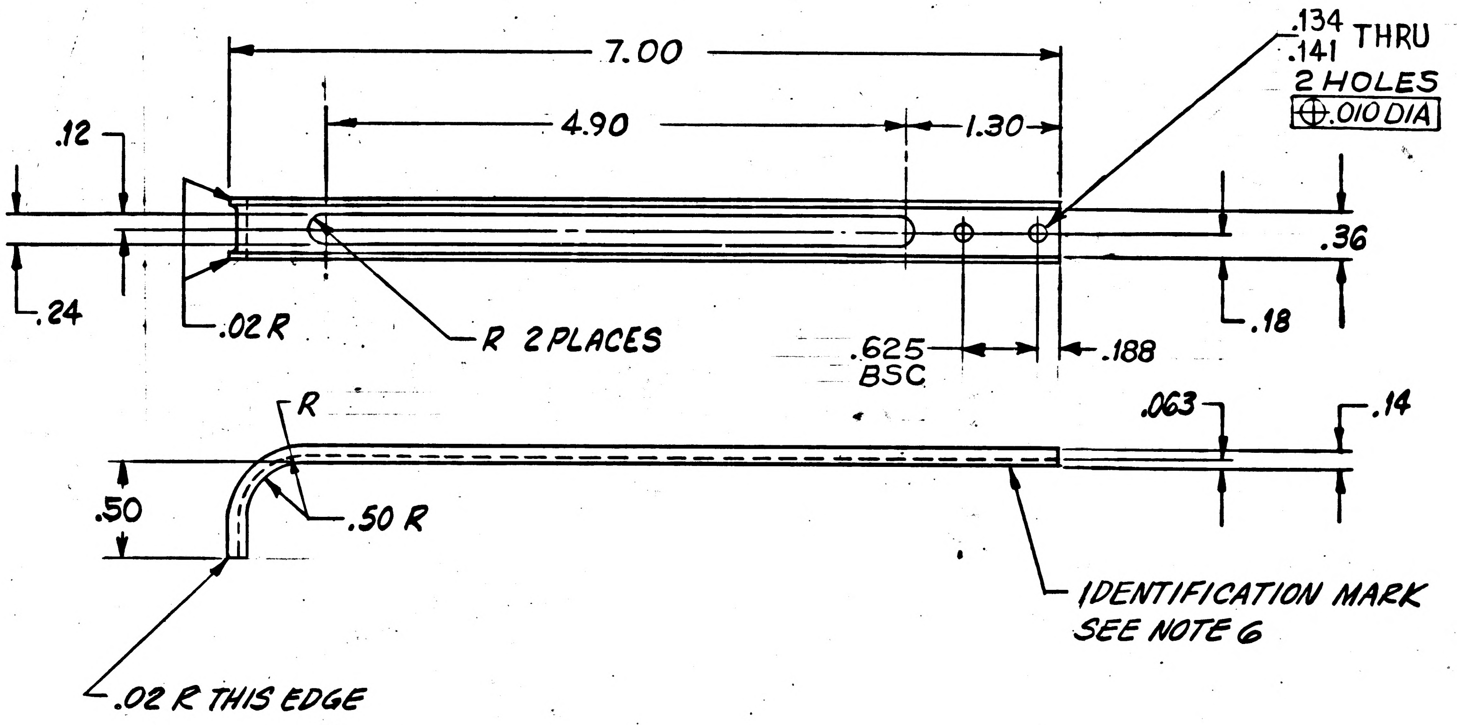
1021362-011	1021373-041	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± - DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DRAWN F. Kosmatka DATE 17 SEP 66 CHECKED W. Diehl 19 OCT '66 APPROVAL R. Temple 19 Oct 66 CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS LEVER, ACTUATING - SXT COVER
1021362-011	1021373-031	MATERIAL SEE NOTE 2	NASA APPROVAL MIT APPROVAL	SIZE C CODE IDENT NO. 80230 1021365
NEXT ASSY	USED ON	APPROVAL Charleston 19 Oct 66		SCALE FULL SHEET 1 OF 1
APPLICATION				

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	10/26/66
	B	CHANGED PER TDRR 32213		9 DEC 66	CP

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/11, TEMPER T651 (AL ALY 6061 T6)
3. FINISH: MIL-A-8625, TYPE 1 (ANODIZE).
4. MUST BE FREE FROM BURRS
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125√.
   B. ALL CORNERS MUST BE .005 TO .015R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.



1021362-011	1021373-041
1021362-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES
± .02	± .005	± -

DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

APPROVAL Charleston 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN F. Kosmalski DATE 17 SEP 66
CHECKED W. Diehl 19 Oct '66
APPROVAL R. Temple 19 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

LEVER, ACTUATING - SXT COVER

SIZE	CODE IDENT NO.	
C	80230	1021365

SCALE FULL
SHEET 1 OF 1

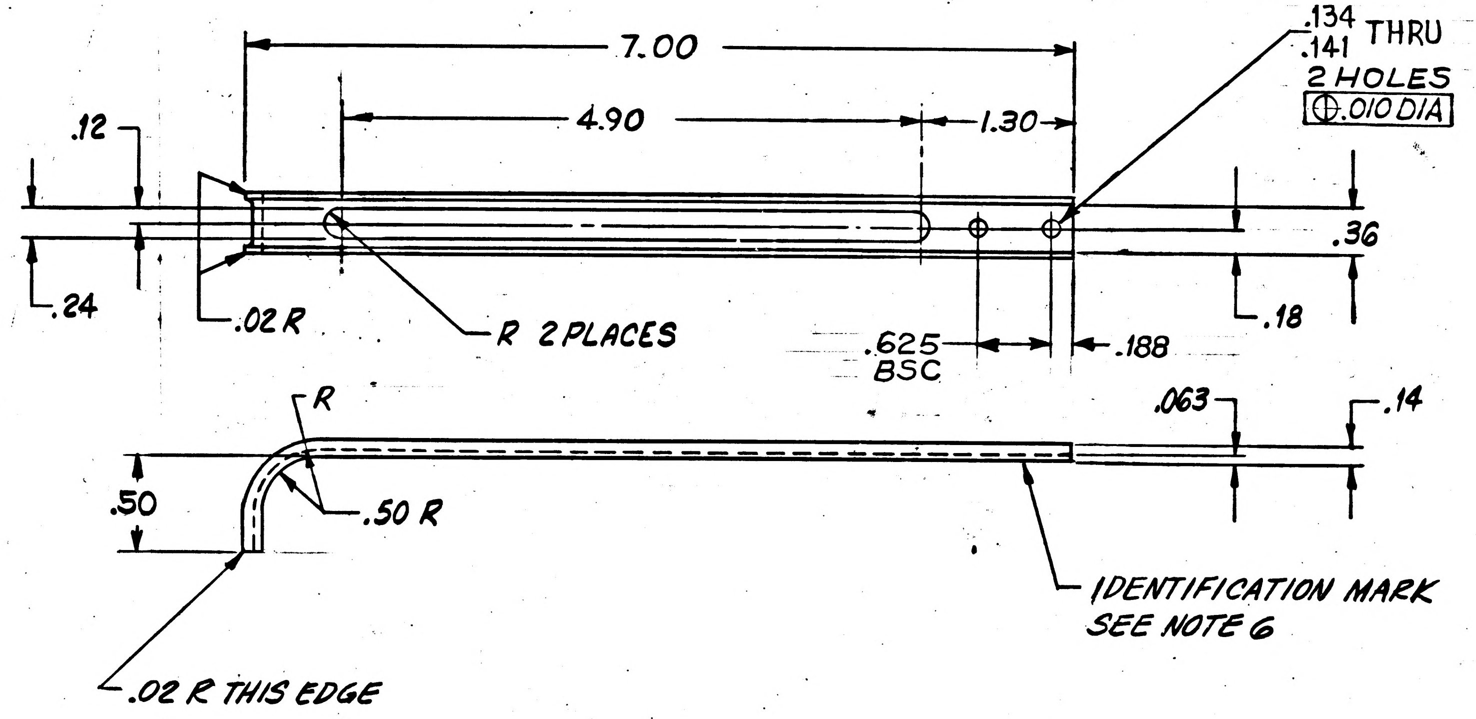
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	10/26/66
	B	CHANGED PER TDRR 32213		9 DEC 66	CP

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/11, TEMPER T651 (AL ALY 6061 T6)
3. FINISH: MIL-A-8625, TYPE 1 (ANODIZE).
4. MUST BE FREE FROM BURRS
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125 √
   B. ALL CORNERS MUST BE .005 TO .015R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.



1021362-011	1021373-041
1021362-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± -
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL Charleston 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN T. Kosmatka DATE 19 SEP 66
CHECKED W. Diehl 19 OCT '66
APPROVAL R. Timple 19 Oct 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

LEVER, ACTUATING - SXT COVER

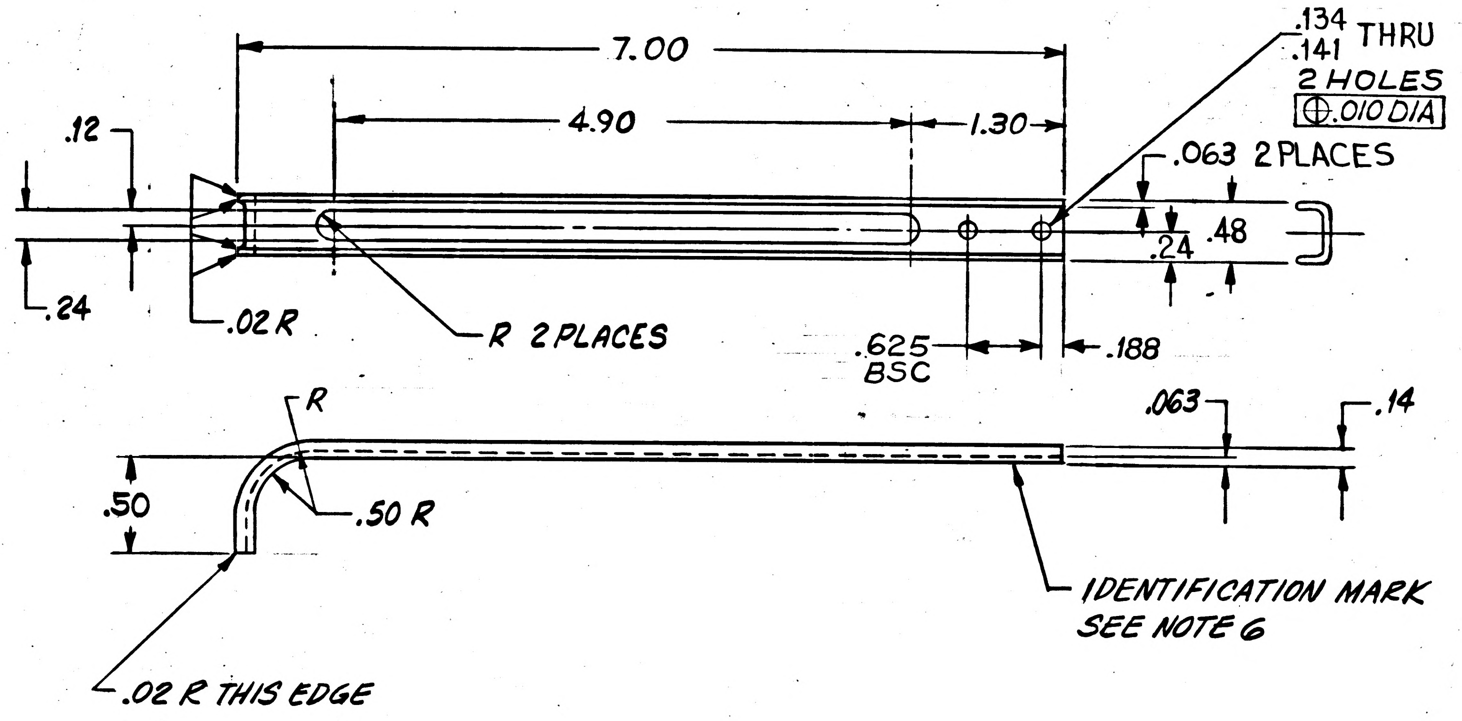
SIZE C CODE IDENT NO. 80230 1021365
SCALE FULL SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	10/26/66
	B	CHANGED PER TDRR 32213		9 DEC 66	CP
	C	REVISED PER TDRR 32917		16 FEB 67	DR M. W.

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/11, TEMPER T651 (AL ALY 6061 T6)
3. FINISH: MIL-A-8625, TYPE 1 (ANODIZE).
4. MUST BE FREE FROM BURRS
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125.
   B. ALL CORNERS MUST BE .005 TO .015R OR CHAMFER.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.



1021362-011	1021373-041
1021362-011	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± -
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL 19 Oct 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN F. Kosmatka DATE 19 SEP 66
CHECKED W. Diehl 19 Oct '66
APPROVAL R. Temple 19 - 66
CONTRACT NAS 9-497
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

LEVER, ACTUATING - SXT COVER

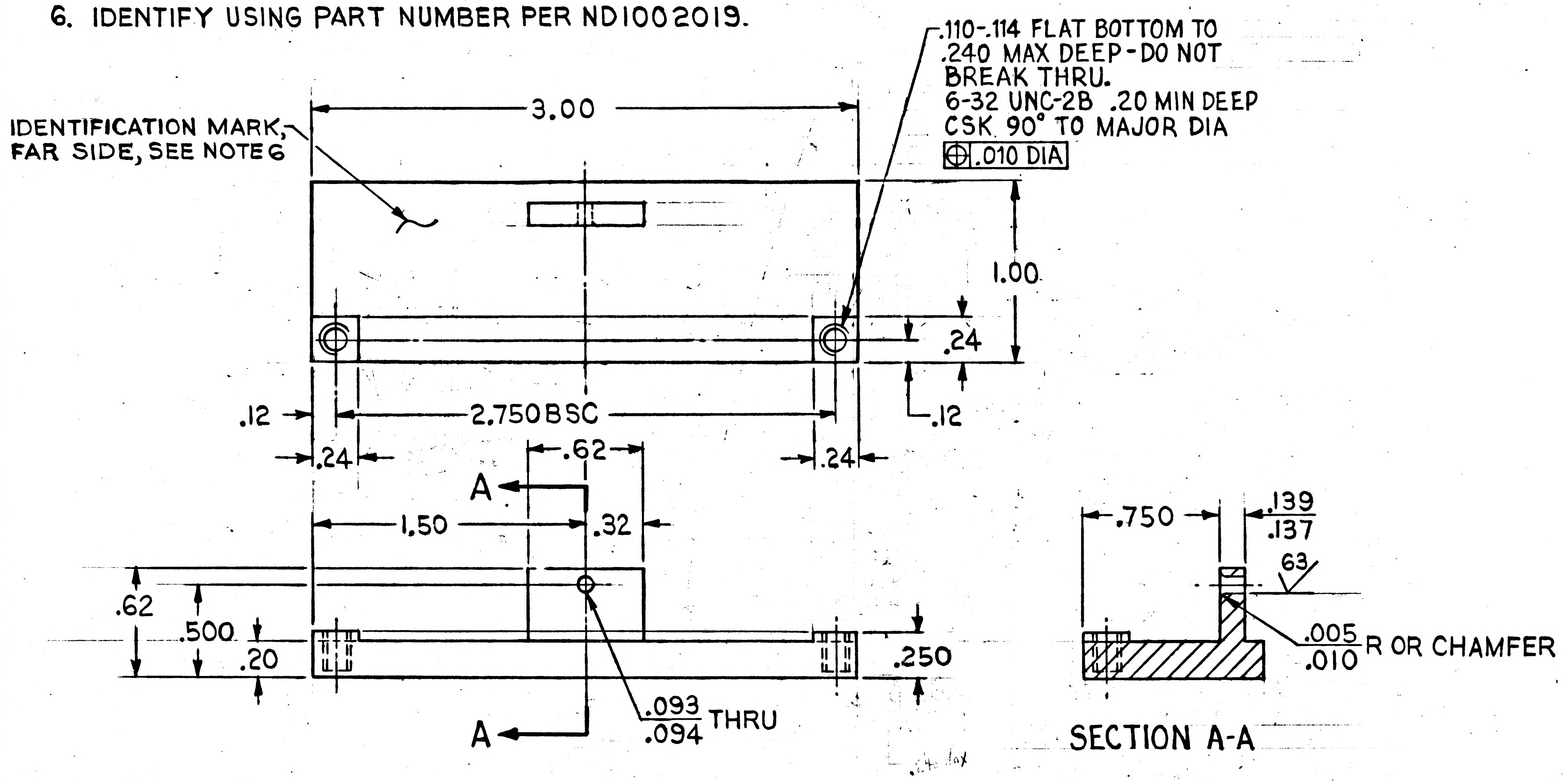
SIZE C
CODE IDENT NO. 80230
1021365
SCALE FULL
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	10/26/66

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-250/11 TEMPER T651 (AL ALY 6061)
3. FINISH: PER MIL-A-8625, TYPE I (ANODIZE).
4. MUST BE FREE FROM BURRS.
5. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED $\sqrt{}^{125}$.
   B. ALL CORNERS MUST BE .005 TO .015 R OR CHAMFER.
6. IDENTIFY USING PART NUMBER PER ND1002019.


.110-.114 FLAT BOTTOM TO
.240 MAX DEEP - DO NOT
BREAK THRU.
6-32 UNC-2B .20 MIN DEEP
CSK 90° TO MAJOR DIA
⊕ .010 DIA
IDENTIFICATION MARK, FAR SIDE, SEE NOTE 6
3.00
1.00
.24
.12
2.750 BSC
.12
.24
.24
.62
A
1.50
.32
.62
.500
.20
.250
.093
.094
THRU
A
.750
.139
.137
63
.005
.010
R OR CHAMFER
SECTION A-A

1021358-021	1021373-041
1021358-021	1021373-031
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 2°	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWG. NO. CONTRACT DRAWN [illegible] DATE 14 OCT 66 CHECKED W. Siebl 19 Oct '66 APPROVAL R. Temple 19 Oct '66	MANNED SPACECRAFT CENTER HOUSTON, TEXAS SUPPORT, LOCKING BALL- SXT COVER		
DO NOT SCALE THIS DRAWING	CONTRACT NAS 9-497			
MATERIAL SEE NOTE 2	NASA APPROVAL	SIZE C	CODE IDENT NO. 80230	1021369
APPROVAL [illegible] 19 Oct 66	MIT APPROVAL	SCALE 2:1		SHEET 1 OF 1

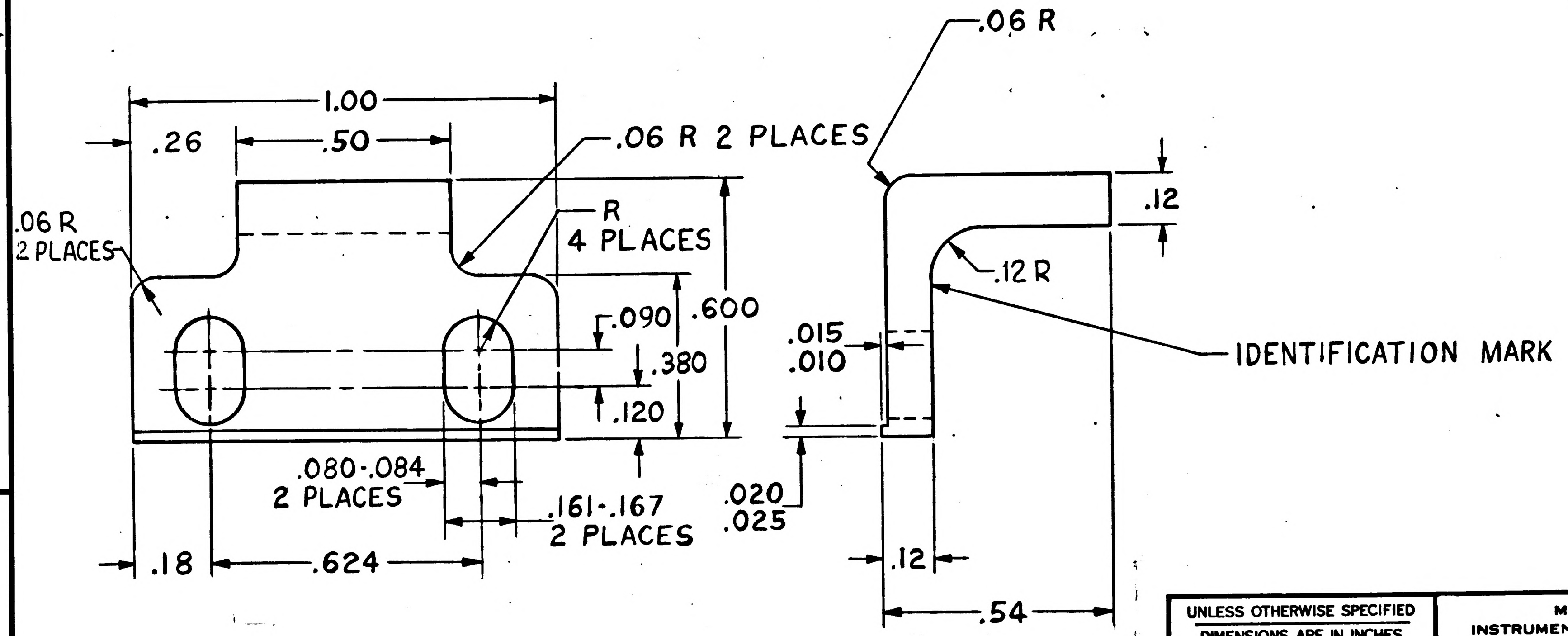
NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS. SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION. OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE. USE. OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	B	INITIAL RELEASE CLASS A PER TDRR 31792		11/3/66	10/20/66

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: PER QQ-A-200/8, TEMPER T6511 OR QQ-A-225/8, TEMPER T6.
3. FINISH: PER MIL-A-8625, TYPE II CLASS II GREY (ANODIZE)
4. MUST BE FREE FROM BURRS.
5. IDENTIFY USING PART NUMBER PER ND1002019.



NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± –
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL [illegible] 28 SEP 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN J. Parks DATE SEP66
CHECKED [illegible] 28 SEP 66
APPROVAL [illegible] 30 SEP 66
CONTRACT NAS 9-497
NASA APPROVAL [illegible]
CCB ~~MIT~~ APPROVAL [illegible] 11/3/66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STOP, SPRING

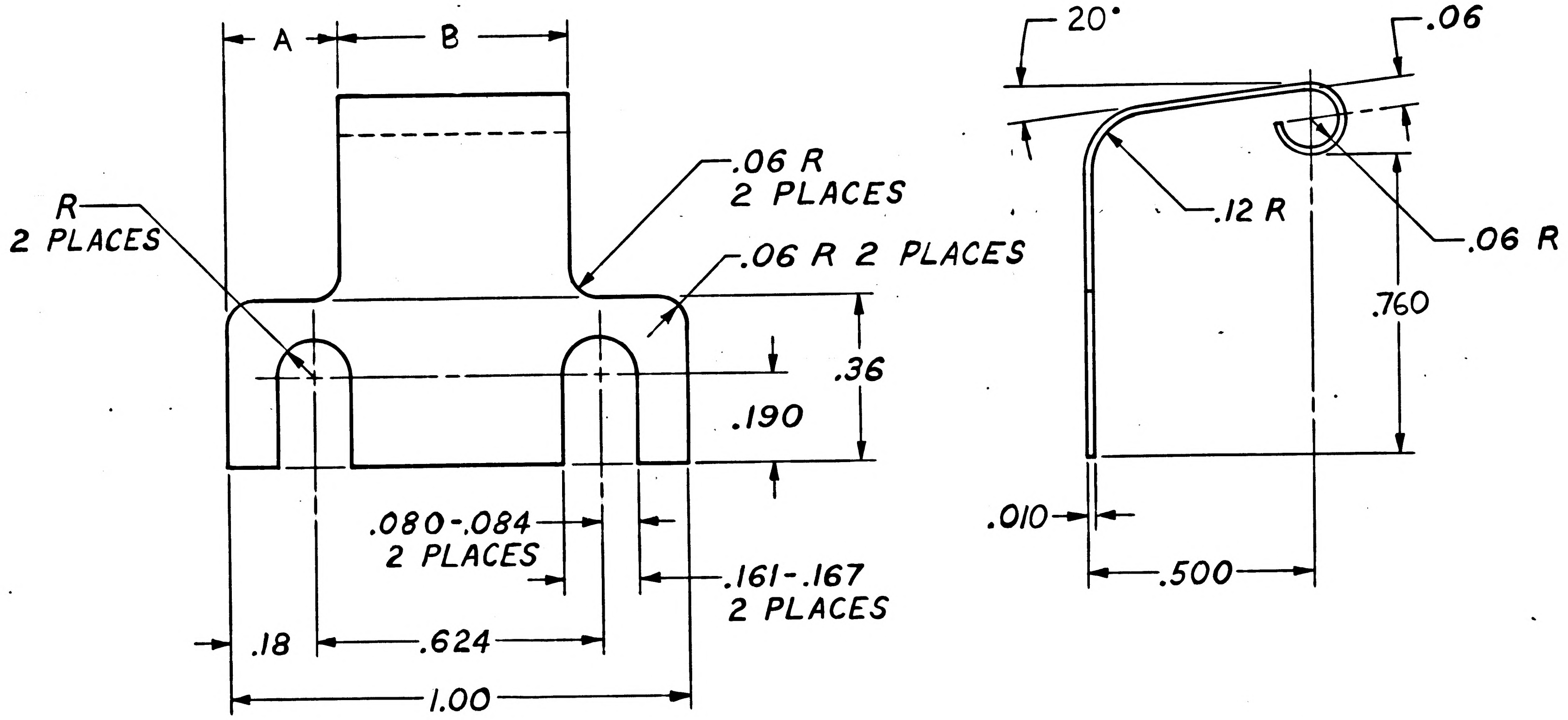
SIZE C
CODE IDENT NO. 80230
1021371
SCALE 4 : 1
SHEET 1 OF 1

MIL-1052C P

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	B	INITIAL RELEASE CLASS A PER TDRR 31792		11/3/66	Dad 10/20/66 Gut

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING PART NUMBER PER ND 1002019.
3. MATERIAL: QQ-C-533, COND A, SOFT BERYLLIUM COPPER.
4. FINISH: MIL-C-26074, CLASS 1, .0004 TO .0007 THICK ELECTROLESS NICKEL.
5. HEAT TREAT: MIL-H-7199, PRECIPITATION HARDEN.
6. MUST BE FREE FROM BURRS AND SHARP EDGES.



DASH	A	B
001	.26	.500
002	.32	.375

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± 0°30'

DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 3

APPROVAL Charles Custer 28 SEP 66

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN Bender DATE 23-SEP-66
CHECKED Mosse 28-SEP-66
APPROVAL R E Lietz 30 SEP 66
CONTRACT NAS 9-497
NASA APPROVAL A C
CCB APPROVAL 11/3/66

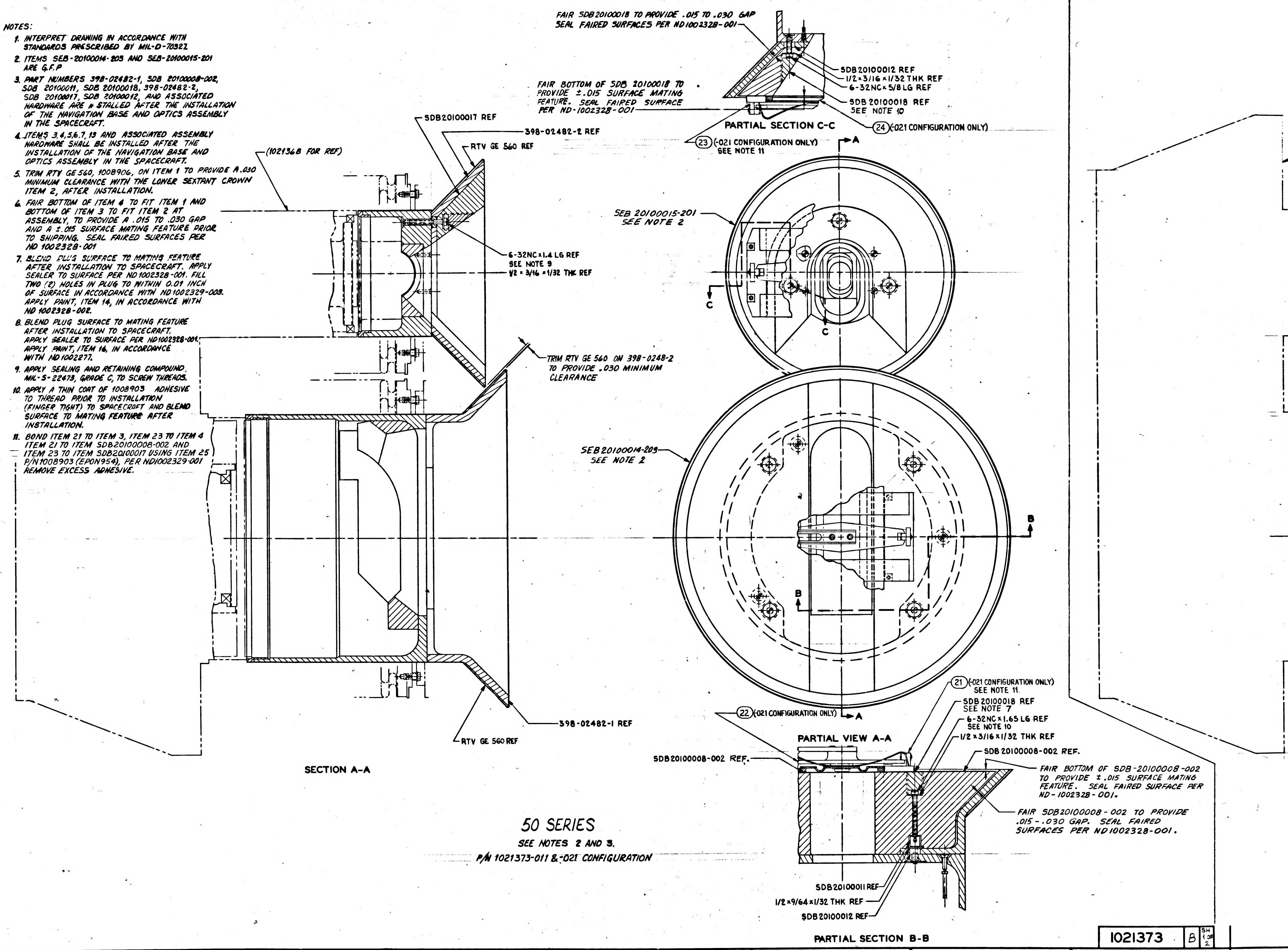
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

SPRING, COVER

SIZE C
CODE IDENT NO. 80230
1021372
SCALE 4:1
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ITEMS SEB-20100014-203 AND SEB-20100015-201 ARE G.F.P
3. PART NUMBERS 398-02482-1, SDB 20100008-002, SDB 20100011, SDB 20100018, 398-02482-2, SDB 20100017, SDB 20100012, AND ASSOCIATED HARDWARE ARE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
4. ITEMS 3, 4, 5, 6, 7, 13 AND ASSOCIATED ASSEMBLY HARDWARE SHALL BE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
5. TRIM RTV GE 560, 1008906, ON ITEM 1 TO PROVIDE A .030 MINIMUM CLEARANCE WITH THE LOWER SEXTANT CROWN ITEM 2, AFTER INSTALLATION.
6. FAIR BOTTOM OF ITEM 4 TO FIT ITEM 1 AND BOTTOM OF ITEM 3 TO FIT ITEM 2 AT ASSEMBLY, TO PROVIDE A .015 TO .030 GAP AND A ±.015 SURFACE MATING FEATURE PRIOR TO SHIPPING. SEAL FAIRED SURFACES PER ND 1002328-001
7. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND 1002328-001. FILL TWO (2) HOLES IN PLUG TO WITHIN 0.01 INCH OF SURFACE IN ACCORDANCE WITH ND 1002329-003. APPLY PAINT, ITEM 14, IN ACCORDANCE WITH ND 1002328-002.
8. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND1002328-001. APPLY PAINT, ITEM 16, IN ACCORDANCE WITH ND 1002277.
9. APPLY SEALING AND RETAINING COMPOUND, MIL-S-22473, GRADE C, TO SCREW THREADS.
10. APPLY A THIN COAT OF 1008903 ADHESIVE TO THREAD PRIOR TO INSTALLATION (FINGER TIGHT) TO SPACECRAFT AND BLEND SURFACE TO MATING FEATURE AFTER INSTALLATION.
11. BOND ITEM 21 TO ITEM 3, ITEM 23 TO ITEM 4 ITEM 21 TO ITEM SDB20100008-002 AND ITEM 23 TO ITEM SDB20100017 USING ITEM 25 P/N 1008903 (EPON954), PER ND1002329-001 REMOVE EXCESS ADHESIVE.


FAIR SDB 20100018 TO PROVIDE .015 TO .030 GAP
SEAL FAIRED SURFACES PER ND1002328-001
FAIR BOTTOM OF SDB 20100018 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
SDB20100012 REF
1/2 × 3/16 × 1/32 THK REF
6-32NC × 5/8 LG REF
SDB 20100018 REF
SEE NOTE 10
PARTIAL SECTION C-C
24 (-021 CONFIGURATION ONLY)
23 (-021 CONFIGURATION ONLY)
SEE NOTE 11
A
SDB20100017 REF
398-02482-2 REF
RTV GE 560 REF
(1021368 FOR REF)
6-32NC × 1.4 LG REF
SEE NOTE 9
1/2 × 3/16 × 1/32 THK REF
TRIM RTV GE 560 ON 398-0248-2 TO PROVIDE .030 MINIMUM CLEARANCE
SEB 20100015-201
SEE NOTE 2
C
C
SEB 20100014-203
SEE NOTE 2
B
B
398-02482-1 REF
RTV GE 560 REF
SECTION A-A
21 (-021 CONFIGURATION ONLY)
SEE NOTE 11.
SDB 20100018 REF
SEE NOTE 7
6-32NC × 1.65 LG REF
SEE NOTE 10
1/2 × 3/16 × 1/32 THK REF
22 (-021 CONFIGURATION ONLY)
A
PARTIAL VIEW A-A
SDB20100008-002 REF.
SDB 20100008-002 REF.
FAIR BOTTOM OF SDB-20100008-002 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001.
FAIR SDB20100008-002 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001.
SDB20100011 REF
1/2 × 9/64 × 1/32 THK REF
SDB20100012 REF
PARTIAL SECTION B-B

50 SERIES

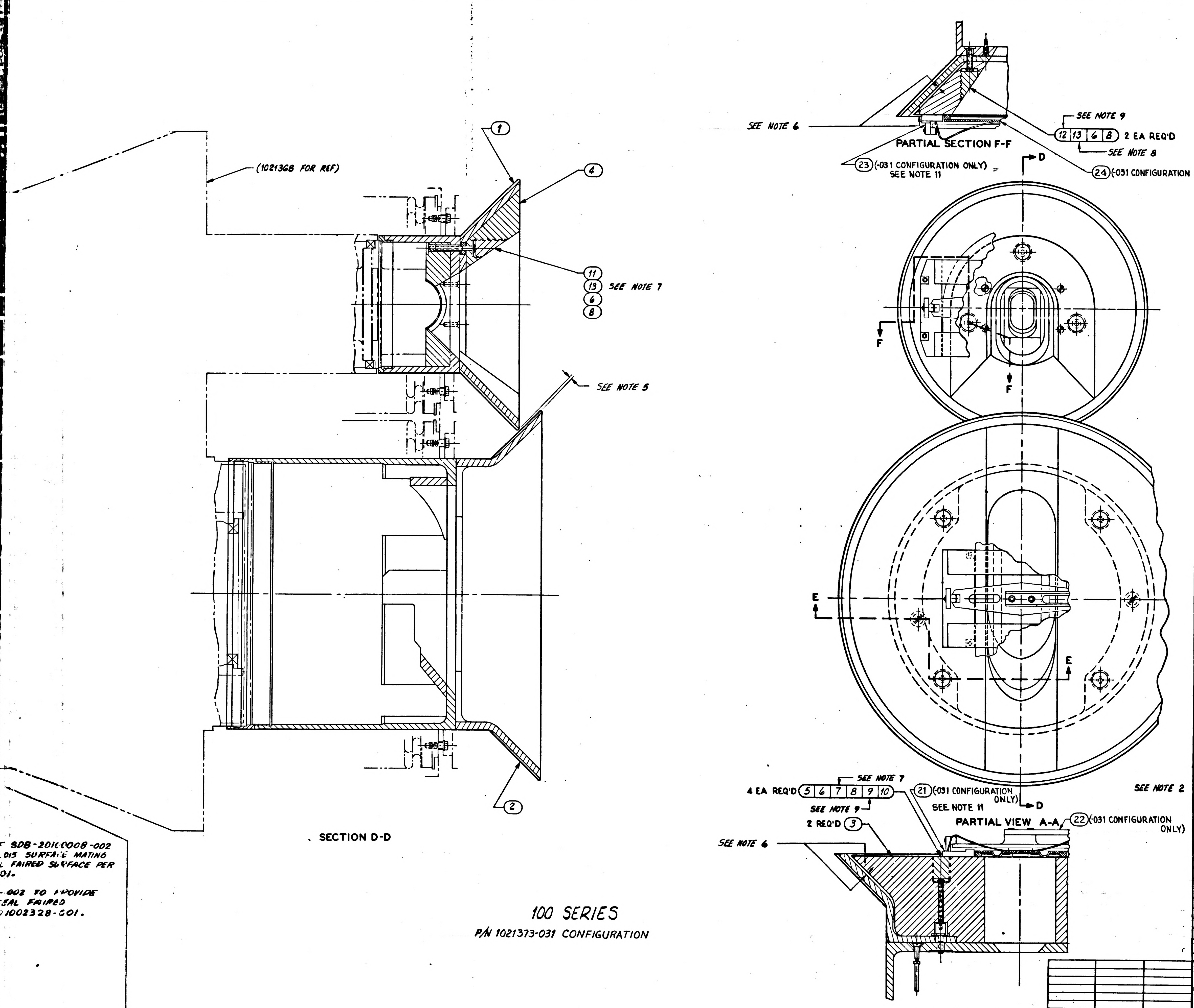
SEE NOTES 2 AND 3.

P/N 1021373-011 & -021 CONFIGURATION

1021373 | B | SH 1 OF 2

1/1021373

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECM 216221		14 NOV 66	JRK EG
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	DG EG



(1021368 FOR REF)
1
4
11
13 SEE NOTE 7
6
8
SEE NOTE 5
2
SECTION D-D
100 SERIES
P/N 1021373-031 CONFIGURATION
SEE NOTE 6
PARTIAL SECTION F-F
SEE NOTE 9
12 13 6 8 2 EA REQ'D
SEE NOTE 8
23 (-031 CONFIGURATION ONLY) SEE NOTE 11
24 (-031 CONFIGURATION ONLY)
D
F
E
SEE NOTE 7
4 EA REQ'D 5 6 7 8 9 10
SEE NOTE 9
21 (-031 CONFIGURATION ONLY)
SEE NOTE 11
2 REQ'D 3
PARTIAL VIEW A-A
22 (-031 CONFIGURATION ONLY)
SEE NOTE 2
PARTIAL SECTION E-E

F SDB-20100008-002
.015 SURFACE MATING
L FAIRED SURFACE PER
01.

-002 TO PROVIDE
SEAL FAIRED
1002328-001.

041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
7					33	1008493	INSULATOR
4					32	1008488	SCREW, SLOTTED, SPECIAL SEXTANT COVER
2					31	1008487-003	SCREW, CAP SLOTTED HEAD
1					30	1008487-002	SCREW, CAP SLOTTED HEAD
4					29	1008487-001	SCREW, CAP, SLOTTED HEAD
11					28	1008486	WASHER, FLAT
1					27	1021377	CROWN HALF AND PLUG ASSY SEXTANT (MATCHED ASSY)
1					26	1021378	CROWN HALF AND PLUG ASSY TELESCOPE (MATCHED ASSY)
	AR	AR			25	1008903	ADHESIVE, EPOXY
	1	1			24	1021352	DUST COVER ASSY (SCT)
	2	2			23	1021358-011	RETAINER, DUST COVER
	1	1			22	1021362	DUST COVER ASSY (SXT
	2	2			21	1021358-021	RETAINER, DUST COVER
	AR	AR	AR		20	1008906	SILICONE RUBBER
	AR	AR	AR		19	1008913	CURING AGENT
	AR	AR	AR		18	1008912	FILLER
	AR	AR	AR		17	1008911	EPOXY RESIN
	AR	AR	AR		16	1012543-001	LIGHT DIFFUSING COATING KIT
		1	1		15	1021373-001	ASTROSEXTANT PASSIVE THERMAL PROTECTIVE ASSY (SERIES 50)
	AR	AR	AR		14	1008910	PAINT, GRAY
	3				13	1021322-002	PLUG
	2				12	1021339-003	SCREW, CAP, SOC. HD.
	1				11	1021339-002	SCREW, CAP, SOC. HD.
	4				10	1021341-002	WASHER
	4				9	1021339-001	SCREW, CAP, SOC. HD.
	7				8	1021341-001	WASHER
	4				7	1021322-001	PLUG
	7				6	1021324	INSULATOR
	4				5	1021326	SCREW, SLOTTED, SPL, SEXTANT COVER
	1				4	1021338	FILLET, PROTECTOR, TELESCOPE COVER
	2				3	1021320	CROWN, HALF, UPPER, SEXTANT COVER
	1				2	1021329	CROWN, HALF, LWR, SEXTANT COVER (INSEP ASSY
	1				1	1021337	CROWN, HALF, LWR, TELESCOPE COVER (INSEP ASSY

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

	NEXT ASSY	USED ON
	1015000	1015000
APPLICABLE DASH NO.	APPLICATION	

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL Charleston 10OCT66

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN T. Koenneke 3 OCT 66 DATE
CHECKED Moly E 4 OCT 66
APPROVAL 4 OCT
CONTRACT
NASA APPROVAL A C Mil
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ASTROSEXTANT PASSIVE
THERMAL PROTECTIVE
SYSTEM ASSEMBLY

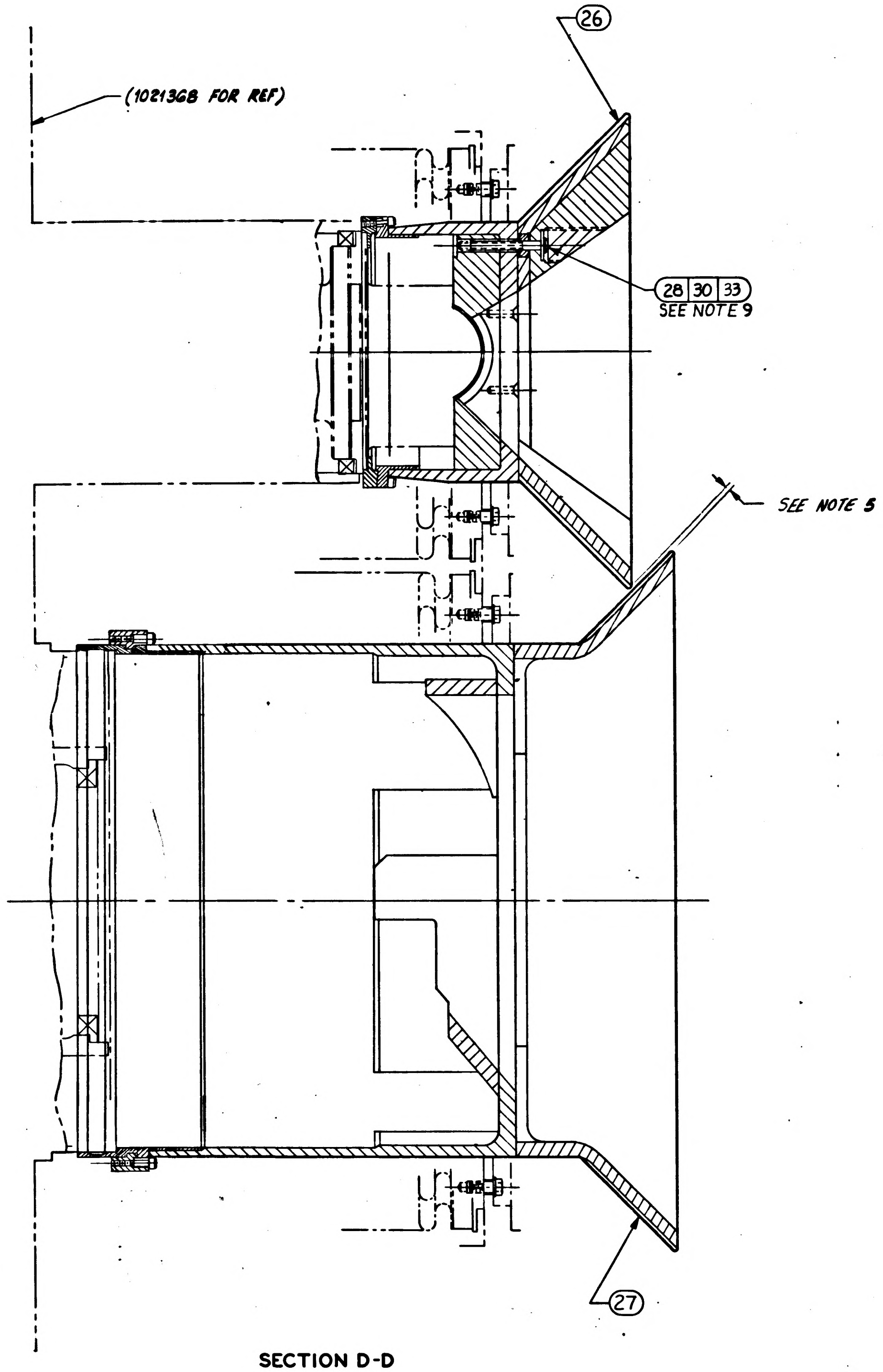
SIZE J2 CODE IDENT NO. 99974 1021373
SCALE FULL SHEET 1 OF 2

1021373 B SH 1 OF 2

102137

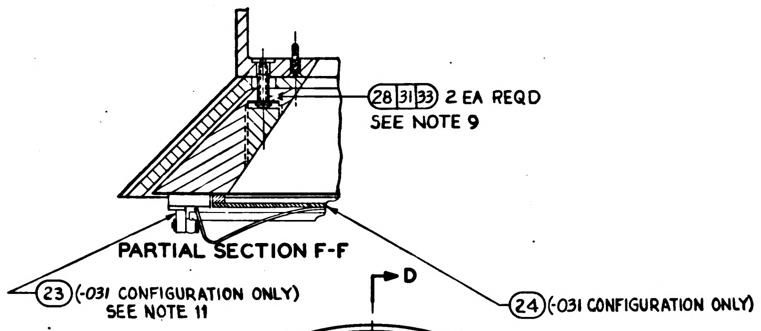
REVISIONS

SYM	ZONE	DESCRIPTION	CHK	DATE
A		REVISED PER ECN 216221		
B		INITIAL RELEASE CLASS A PER TDRR 32202		



26
(1021368 FOR REF)
28 30 33
SEE NOTE 9
SEE NOTE 5
27

SECTION D-D

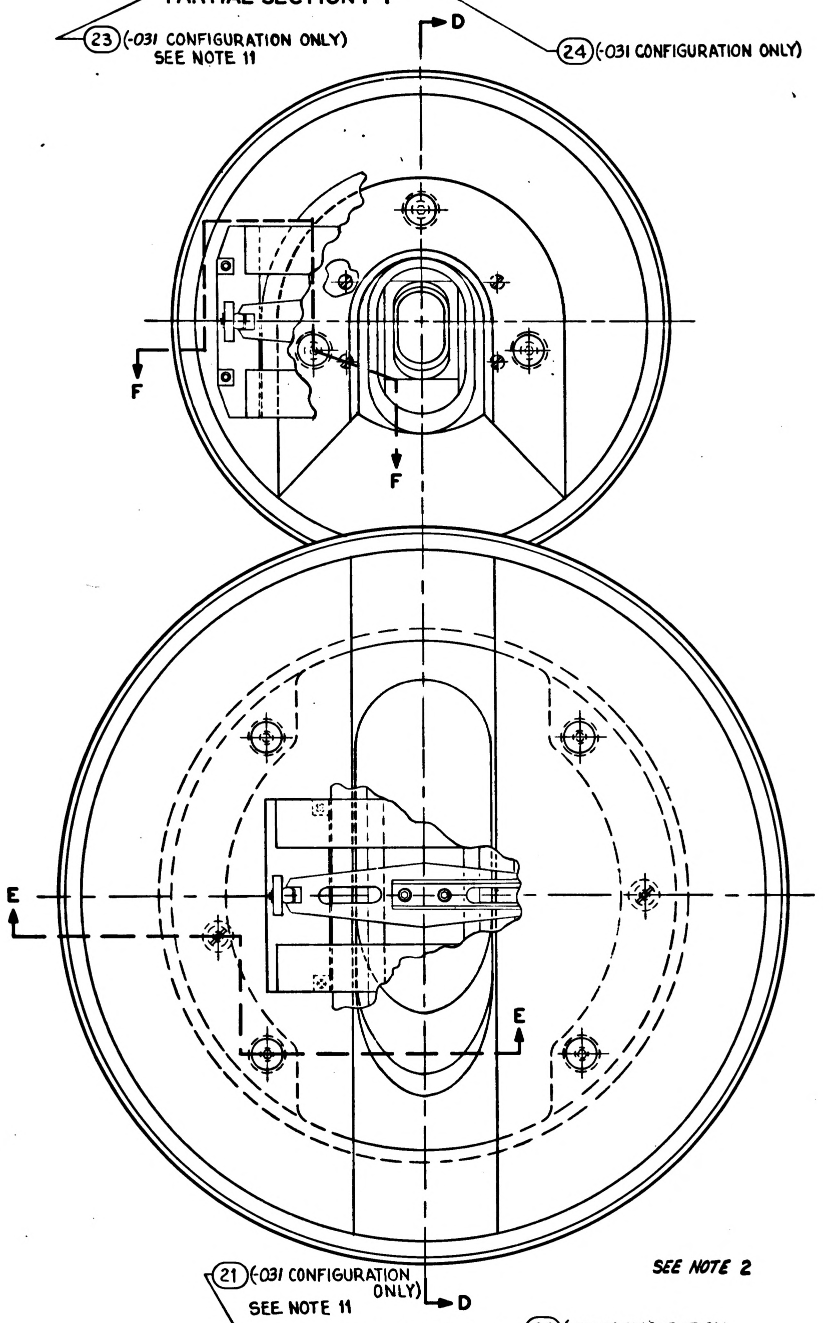


28 31 33 2 EA REQD
SEE NOTE 9

PARTIAL SECTION F-F

23 (-031 CONFIGURATION ONLY)
SEE NOTE 11

24 (-031 CONFIGURATION ONLY)

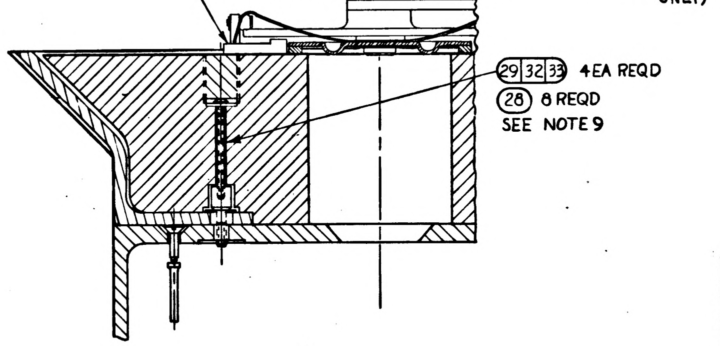


SEE NOTE 2

21 (-031 CONFIGURATION ONLY)
SEE NOTE 11

PARTIAL VIEW A-A

22 (-031 CONFIGURATION ONLY)



29 32 33 4 EA REQD
28 8 REQD
SEE NOTE 9

PARTIAL SECTION E-E

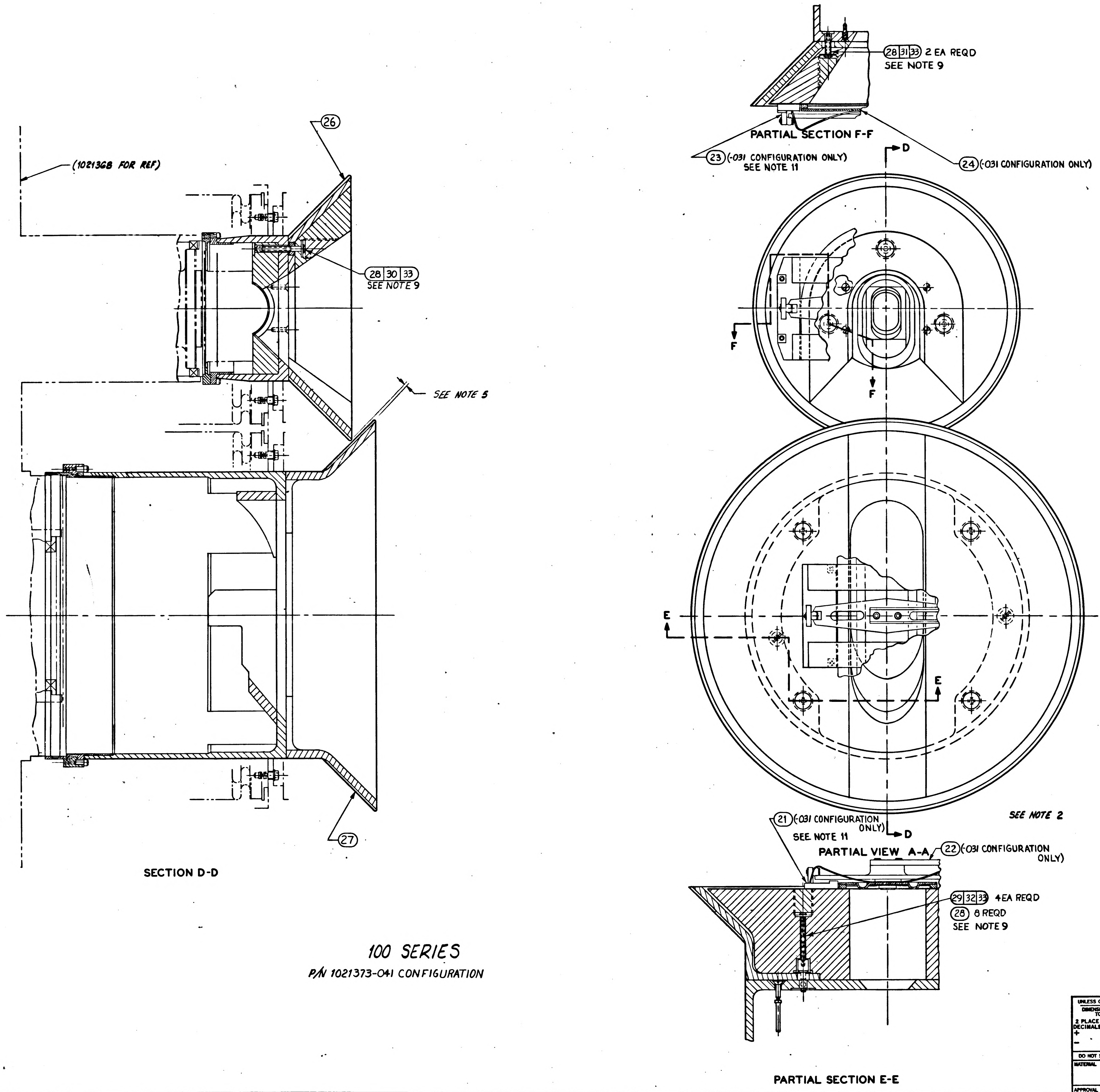
100 SERIES

P/N 1021373-041 CONFIGURATION

UNLESS OTHERWISE SPEC DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION ENERAL MOTORS CORP. MILWAUKEE WIS.	MANNE SPACECRAFT ENTER HOUSTON, T AS
DO NOT SCALE THIS DRAWING	DRAWN D. [illegible] DATE 3 Oct. 66 CHECKED W. Lill 25 Oct 66 APPROVAL [illegible] 25 OCT 66 CONTRACT	ASTROSEXTANT PAS THERMAL PROTEC SYSTEM ASSEMBL
MATERIAL	NASA APPROVAL	SIZE E CODE IDENT NO. 99974 102137
APPROVAL	MIT APPROVAL	SCALE FULL SHEET

1/1021373

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECM 216221		14 NOV 66	JRK EG
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	DG EG


28 31 33 2 EA REQD
SEE NOTE 9
PARTIAL SECTION F-F
23 (-031 CONFIGURATION ONLY) SEE NOTE 11
24 (-031 CONFIGURATION ONLY)
D
F
F
E
E
D
26
(1021368 FOR REF)
28 30 33
SEE NOTE 9
SEE NOTE 5
27
SECTION D-D
21 (-031 CONFIGURATION ONLY)
SEE NOTE 11
PARTIAL VIEW A-A
22 (-031 CONFIGURATION ONLY)
SEE NOTE 2
29 32 33 4 EA REQD
28 8 REQD
SEE NOTE 9
PARTIAL SECTION E-E

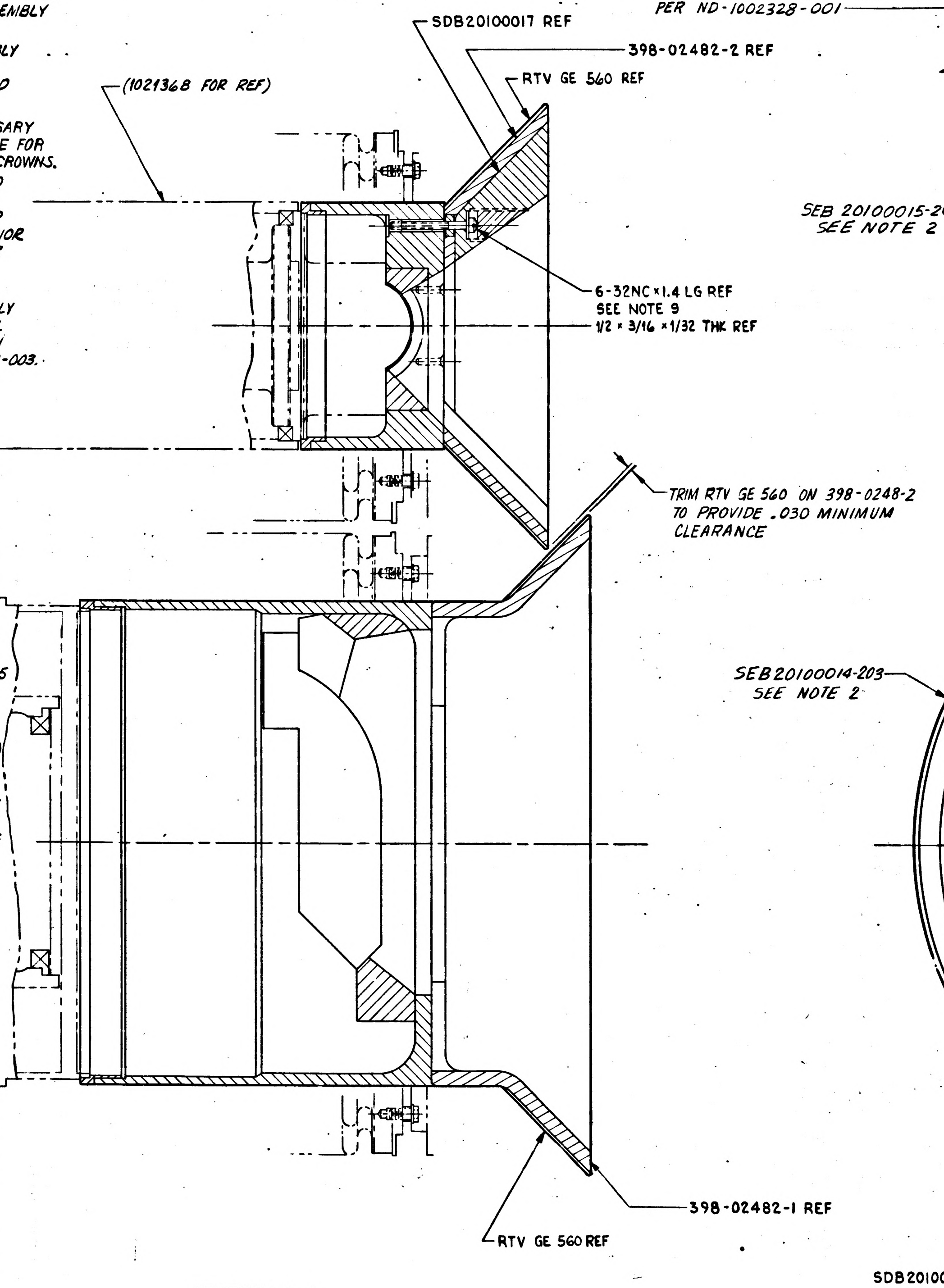
100 SERIES

P/N 1021373-041 CONFIGURATION

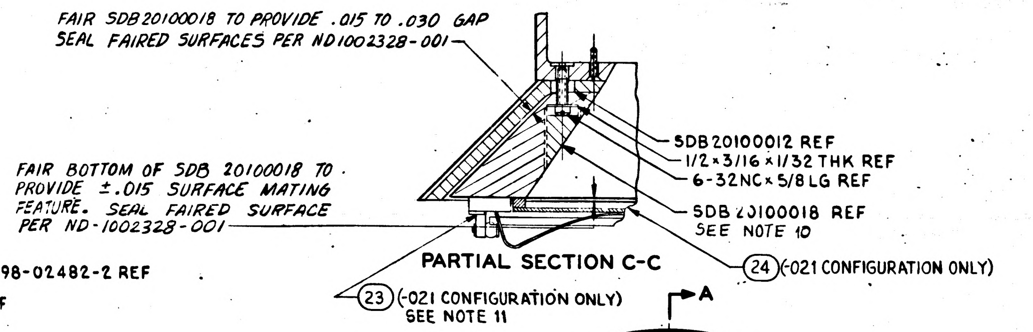
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN 3 Oct. 66 DATE CHECKED W. Paill 25 Oct 66 APPROVAL 25 Oct 66 CONTRACT	ASTROSEXTANT PASSIVE THERMAL PROTECTIVE SYSTEM ASSEMBLY
MATERIAL	NASA APPROVAL	SIZE E · CODE IDENT NO. 99974 · 1021373
APPROVAL	MIT APPROVAL	SCALE FULL · SHEET 2 of 2

NOTES:

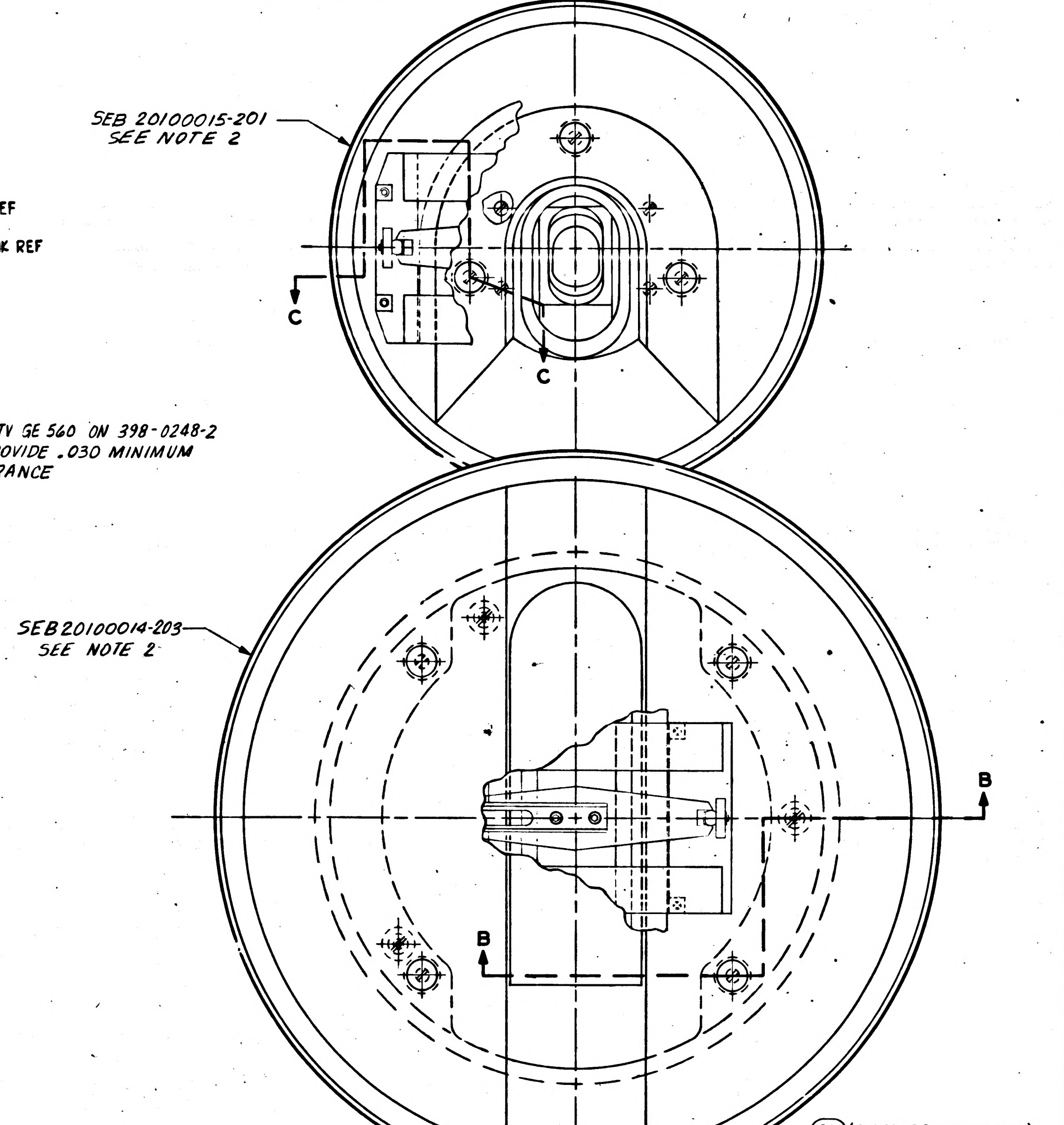
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ITEMS SEB-20100014-203 AND SEB-20100015-201 ARE G.F.P
3. PART NUMBERS 398-02482-1, SDB 20100008-002, SDB 20100011, SDB 20100018, 398-02482-2, SDB 20100017, SDB 20100012, AND ASSOCIATED HARDWARE ARE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
4. ITEMS 3,4,5,6,7,13 AND ASSOCIATED ASSEMBLY HARDWARE SHALL BE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
5. TRIM RTV (1008906) AND RPP, AS NECESSARY TO PROVIDE A MINIMUM OF .030 CLEARANCE FOR 360° ROTATION OF SEXTANT AND TELESCOPE CROWNS.
6. FAIR BOTTOM OF ITEM 4 TO FIT ITEM 1 AND BOTTOM OF ITEM 3 TO FIT ITEM 2 AT ASSEMBLY, TO PROVIDE A .015 TO .030 GAP AND A ±.015 SURFACE MATING FEATURE PRIOR TO SHIPPING. SEAL FAIRED SURFACES PER ND 1002328-001
7. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND 1002328-001. FILL TWO (2) HOLES IN PLUG TO WITHIN 0.01 INCH OF SURFACE IN ACCORDANCE WITH ND 1002329-003. APPLY PAINT, ITEM 14, IN ACCORDANCE WITH ND 1002328-002.
8. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND1002328-001. APPLY PAINT, ITEM 16, IN ACCORDANCE WITH ND 1002277.
9. APPLY SEALING AND RETAINING COMPOUND, MIL-S-22473, GRADE C, TO SCREW THREADS.
10. APPLY A THIN COAT OF 1008903 ADHESIVE TO THREAD PRIOR TO INSTALLATION (FINGER TIGHT) TO SPACECRAFT AND BLEND SURFACE TO MATING FEATURE AFTER INSTALLATION.
11. BOND ITEM 21 TO ITEM 3, ITEM 23 TO ITEM 4 ITEM 21 TO ITEM SDB20100008-002 AND ITEM 23 TO ITEM SDB20100017 USING ITEM 25 P/N 1008903 (EPON954), PER ND1002329-001 REMOVE EXCESS ADHESIVE.
12. BOND ITEM 21 TO ITEM 27 AND ITEM 23 TO ITEM 26 USING ITEM 25, P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.
13. ORIENTATION OF TELESCOPE AND SEXTANT ARE FOR DRAWING CLARITY ONLY AND DOES NOT REPRESENT POSITION OF EACH WHEN EJECTABLE COVERS ARE ATTACHED.

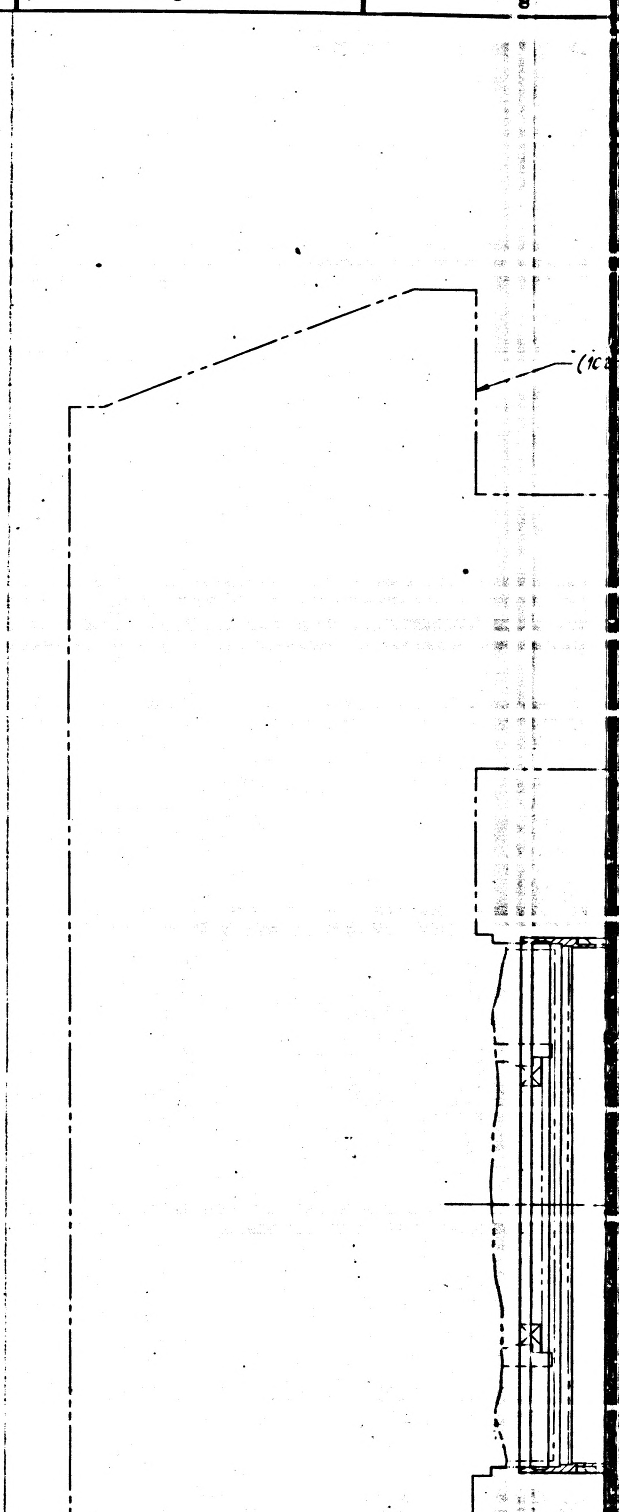

SDB20100017 REF
398-02482-2 REF
RTV GE 560 REF
(1021368 FOR REF)
6-32NC×1.4 LG REF
SEE NOTE 9
1/2 × 3/16 ×1/32 THK REF
TRIM RTV GE 560 ON 398-0248-2
TO PROVIDE .030 MINIMUM
CLEARANCE
398-02482-1 REF
RTV GE 560 REF

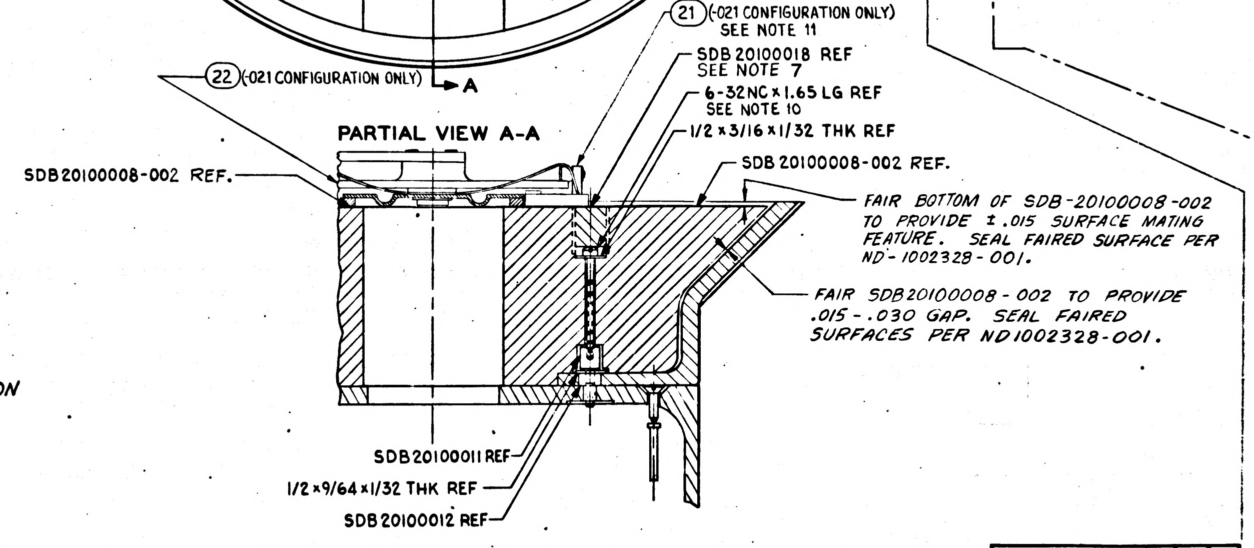
SECTION A-A


FAIR SDB20100018 TO PROVIDE .015 TO .030 GAP
SEAL FAIRED SURFACES PER ND1002328-001
FAIR BOTTOM OF SDB 20100018 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
SDB20100012 REF
1/2×3/16×1/32 THK REF
6-32NC×5/8 LG REF
SDB 20100018 REF
SEE NOTE 10
24 (-021 CONFIGURATION ONLY)
23 (-021 CONFIGURATION ONLY)
SEE NOTE 11

PARTIAL SECTION C-C


A
SEB 20100015-201
SEE NOTE 2
C
C
SEB20100014-203
SEE NOTE 2
B
B




21 (-021 CONFIGURATION ONLY)
SEE NOTE 11
SDB 20100018 REF
SEE NOTE 7
6-32NC×1.65 LG REF
SEE NOTE 10
1/2×3/16×1/32 THK REF
22 (-021 CONFIGURATION ONLY)
A
SDB20100008-002 REF.
SDB 20100008-002 REF.
FAIR BOTTOM OF SDB-20100008-002 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001.
FAIR SDB20100008-002 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001.
SDB20100011 REF
1/2×9/64×1/32 THK REF
SDB20100012 REF

PARTIAL VIEW A-A

PARTIAL SECTION B-B

50 SERIES

SEE NOTES 2 AND 3.

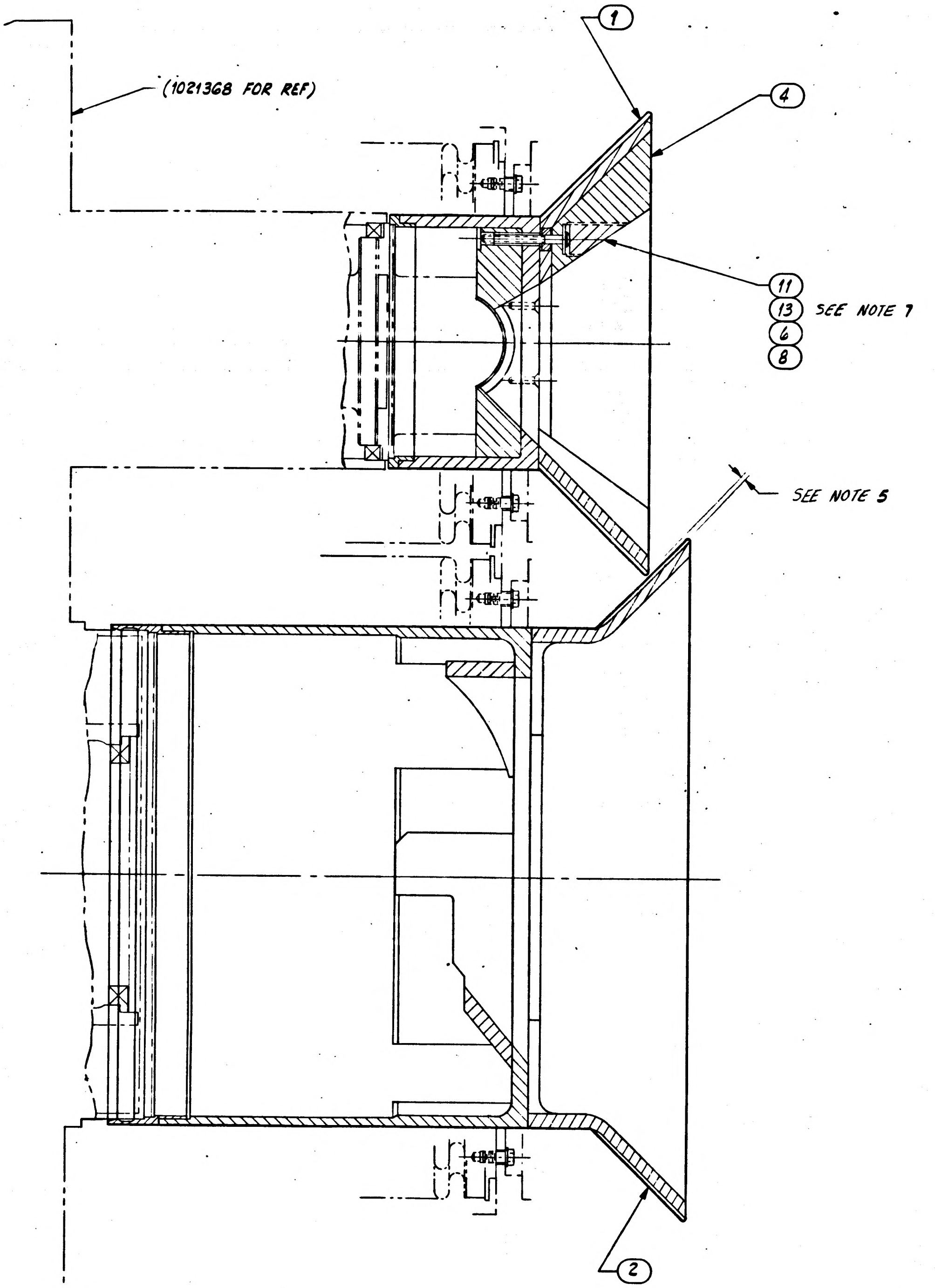
P/N 1021373-011 &-021 CONFIGURATION

1021373	B	SH 1 OF 2

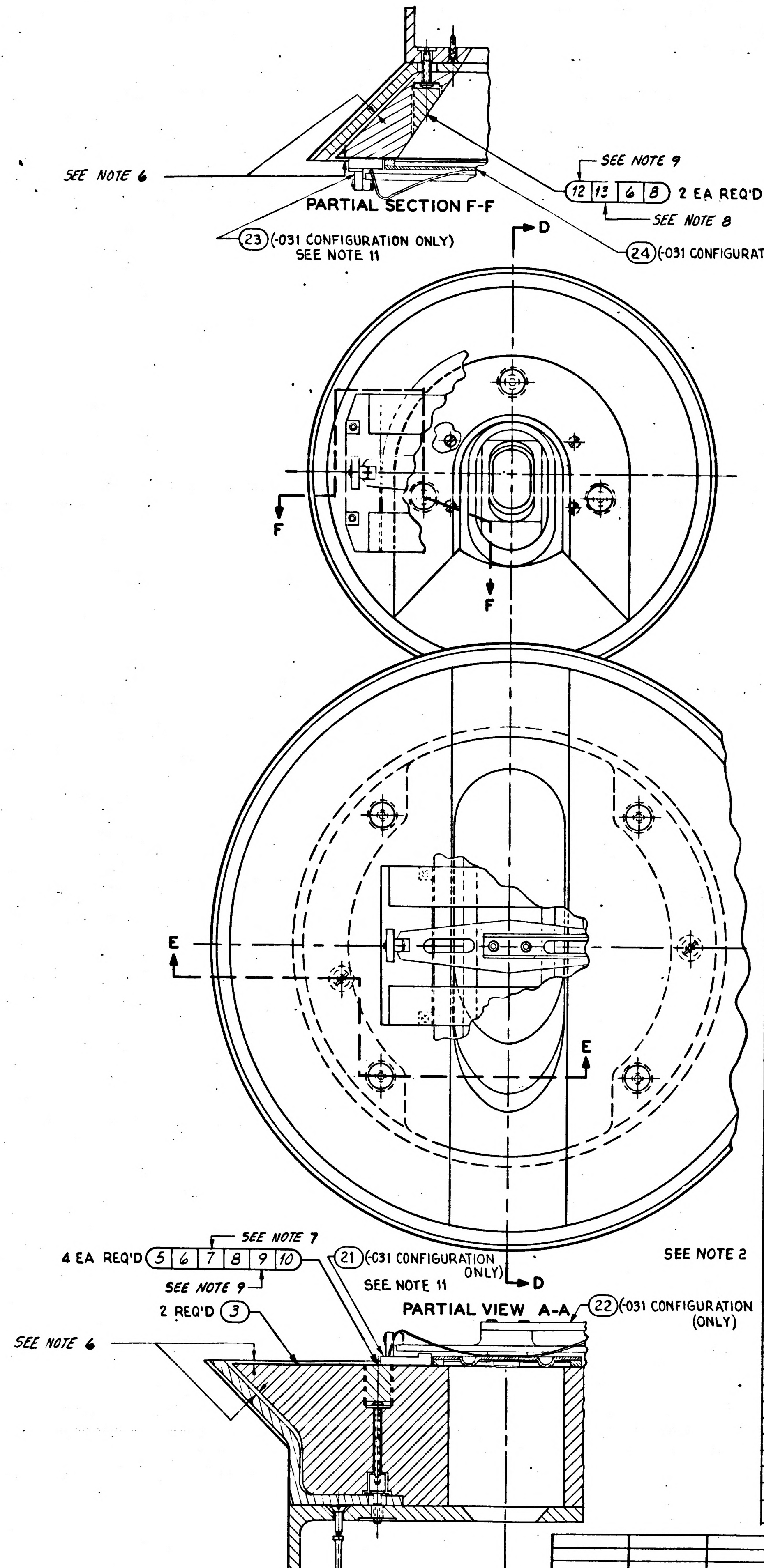
1/1021373

1021373

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECM 216221		14 NOV 66	JRK. EJ
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	DG EJ
C		REVISED PER TDRR 33015		28 FEB 67	JWE RCG


(1021368 FOR REF)
1
4
11
13 SEE NOTE 7
6
8
SEE NOTE 5
2

SECTION D-D


SEE NOTE 6
PARTIAL SECTION F-F
SEE NOTE 9
12 13 6 8 2 EA REQ'D
SEE NOTE 8
23 (-031 CONFIGURATION ONLY)
SEE NOTE 11
24 (-031 CONFIGURATION ONLY)
D
F
F
E
E
4 EA REQ'D 5 6 7 8 9 10
SEE NOTE 7
SEE NOTE 9
21 (-031 CONFIGURATION ONLY)
SEE NOTE 11
D
SEE NOTE 2
2 REQ'D 3
PARTIAL VIEW A-A
22 (-031 CONFIGURATION (ONLY)
SEE NOTE 6

PARTIAL SECTION E-E

SDB 20100C08-002
015 SURFACE MATING
FAIRED SURFACE PER
01.

002 TO PROVIDE
EAL FAIRED
1002328-001.

100 SERIES

P/N 1021373-031 CONFIGURATION

051	041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
7	7					33	1008493	INSULATOR
4	4					32	1008488	SCREW, SLOTTED, SPECIAL SEXTANT COVER
4	2					31	1008487-003	SCREW, CAP SLOTTED HEAD
1	1					30	1008487-002	SCREW, CAP SLOTTED HEAD
4	4					29	1008487-001	SCREW, CAP SLOTTED HEAD
13	11					28	1008486	WASHER, FLAT
1	1					27	1021377-011	CROWN HALF AND PLUG ASSY SEXTANT (MATCHED ASSY)
1	1					26	1021378-011	CROWN HALF AND PLUG ASSY TELESCOPE (MATCHED ASSY)
AR		AR	AR			25	1008903	ADHESIVE, EPOXY
		1	1			24	1021352-011	DUST COVER ASSY (SCT)
2		2	2			23	1021358-011	RETAINER, DUST COVER
		1	1			22	1021362-011	DUST COVER ASSY (SXT)
2		2	2			21	1021358-021	RETAINER, DUST COVER
		AR	AR	AR		20	1008906	SILICONE RUBBER
		AR	AR	AR		19	1008913	CURING AGENT
		AR	AR	AR		18	1008912	FILLER
		AR	AR	AR		17	1008911	EPOXY RESIN
		AR	AR	AR		16	1012543-001	LIGHT DIFFUSING COATING KIT
			1	1		15	1021373-001	ASTROSEXTANT PASSIVE THERMAL PROTECTIVE ASSY (SERIES 50)
		AR	AR	AR		14	1008910	PAINT, GRAY
		3				13	1021322-002	PLUG
		2				12	1021339-003	SCREW, CAP, SOC. HD.
		1				11	1021339-002	SCREW, CAP, SOC. HD.
		4				10	1021341-002	WASHER
		4				9	1021339-001	SCREW, CAP, SOC. HD.
		7				8	1021341-001	WASHER
		4				7	1021322-001	PLUG
		7				6	1021324	INSULATOR
		4				5	1021326	SCREW, SLOTTED, SPL, SEXTANT COVER
		1				4	1021338	FILLET, PROTECTOR, TELESCOPE COVER
		2				3	1021320	CROWN, HALF, UPPER, SEXTANT COVER
		1				2	1021329	CROWN, HALF, LWR, SEXTANT COVER (INSEP ASSY
		1				1	1021337	CROWN, HALF, LWR, TELESCOPE COVER (INSEP ASSY

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

	NEXT ASSY	USED ON
	1015000	1015000
APPLICABLE DASH NO.	APPLICATION	

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± —
3 PLACE DECIMALS ± —
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN J. Koonstha DATE 3 OCT 66
CHECKED 4-5-66
APPROVAL
CONTRACT
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

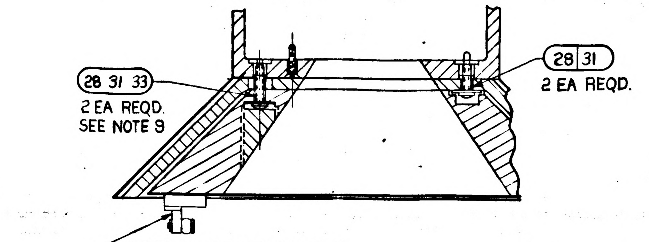
ASTROSEXTANT PASSIVE
THERMAL PROTECTIVE
SYSTEM ASSEMBLY

SIZE J2
CODE IDENT NO. 99974
1021373
SCALE FULL
SHEET 1 OF 2

1021373 B SH 1 OF 2

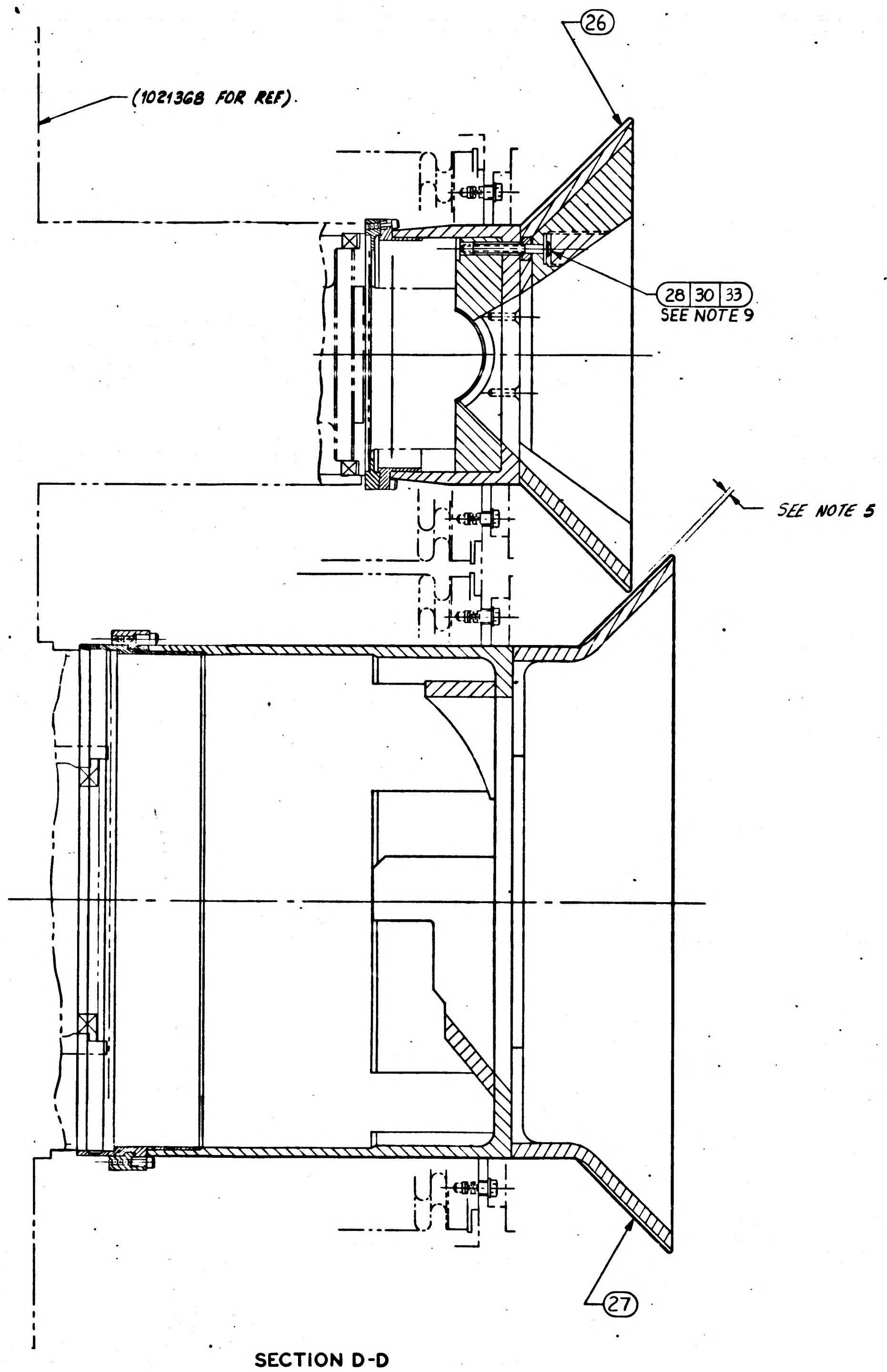
2/1021373

SYM	ZONE	DESCRIPTION	CHG	D	DATE
A		REVISED PER EGN 216221			14 N
B		INITIAL RELEASE CLASS A PER TDRR 32262			12/1
C		REVISED PER TDRR 33015			28 FE



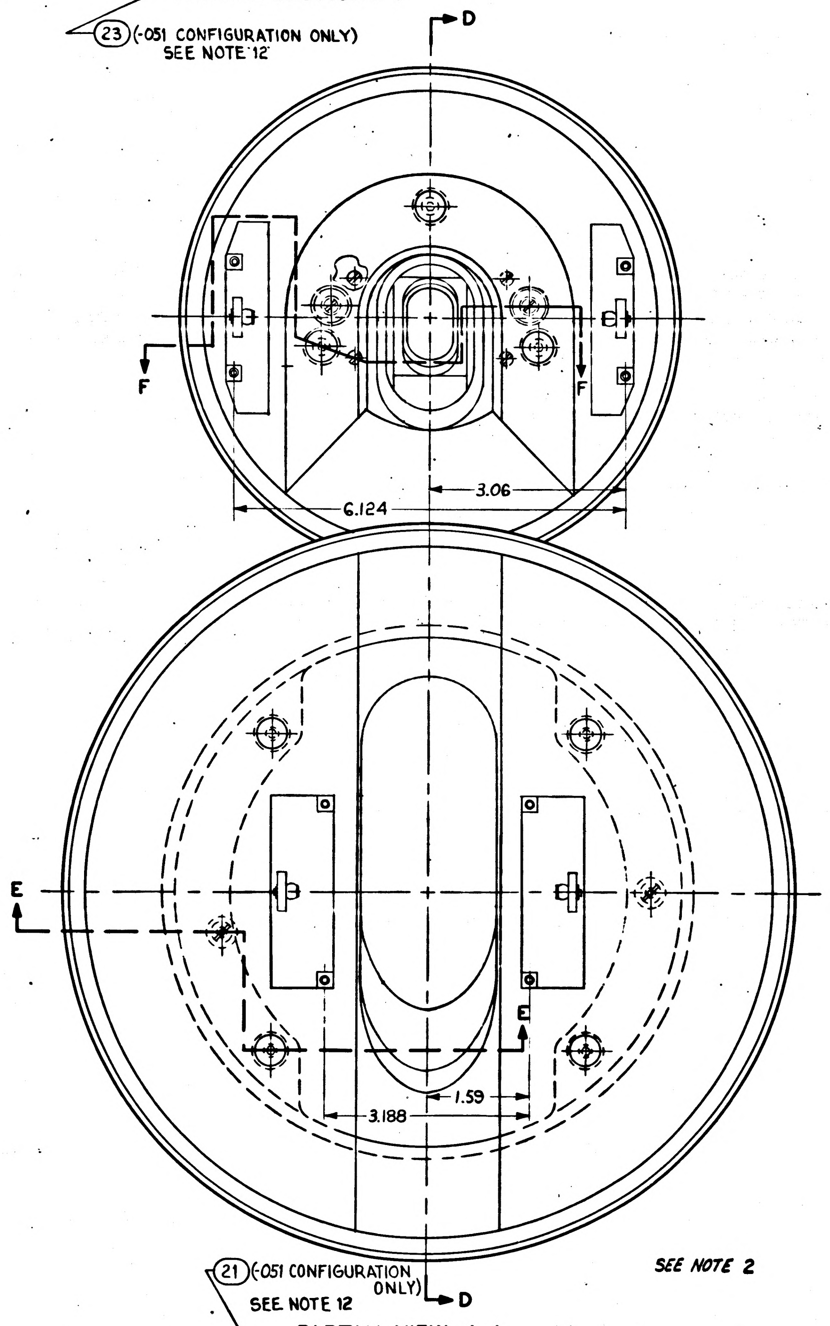
28 31 33
2 EA REQD.
SEE NOTE 9
28 31
2 EA REQD.

PARTIAL SECTION F-F



26
(10213GB FOR REF)
28 30 33
SEE NOTE 9
SEE NOTE 5
27

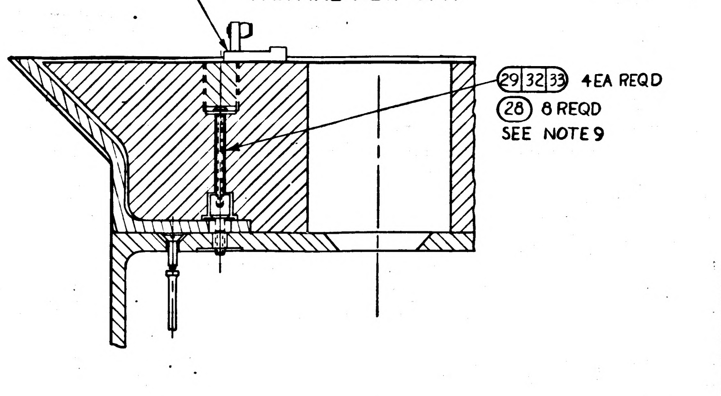
SECTION D-D



23 (-051 CONFIGURATION ONLY)
SEE NOTE 12
D
F
F
6.124
3.06
E
E
3.188
1.59
21 (-051 CONFIGURATION ONLY)
SEE NOTE 12
D

SEE NOTE 2

PARTIAL VIEW A-A



29 32 33 4EA REQD
28 8 REQD
SEE NOTE 9

PARTIAL SECTION E-E

100 SERIES
P/N 1021373-041 CONFIGURATION

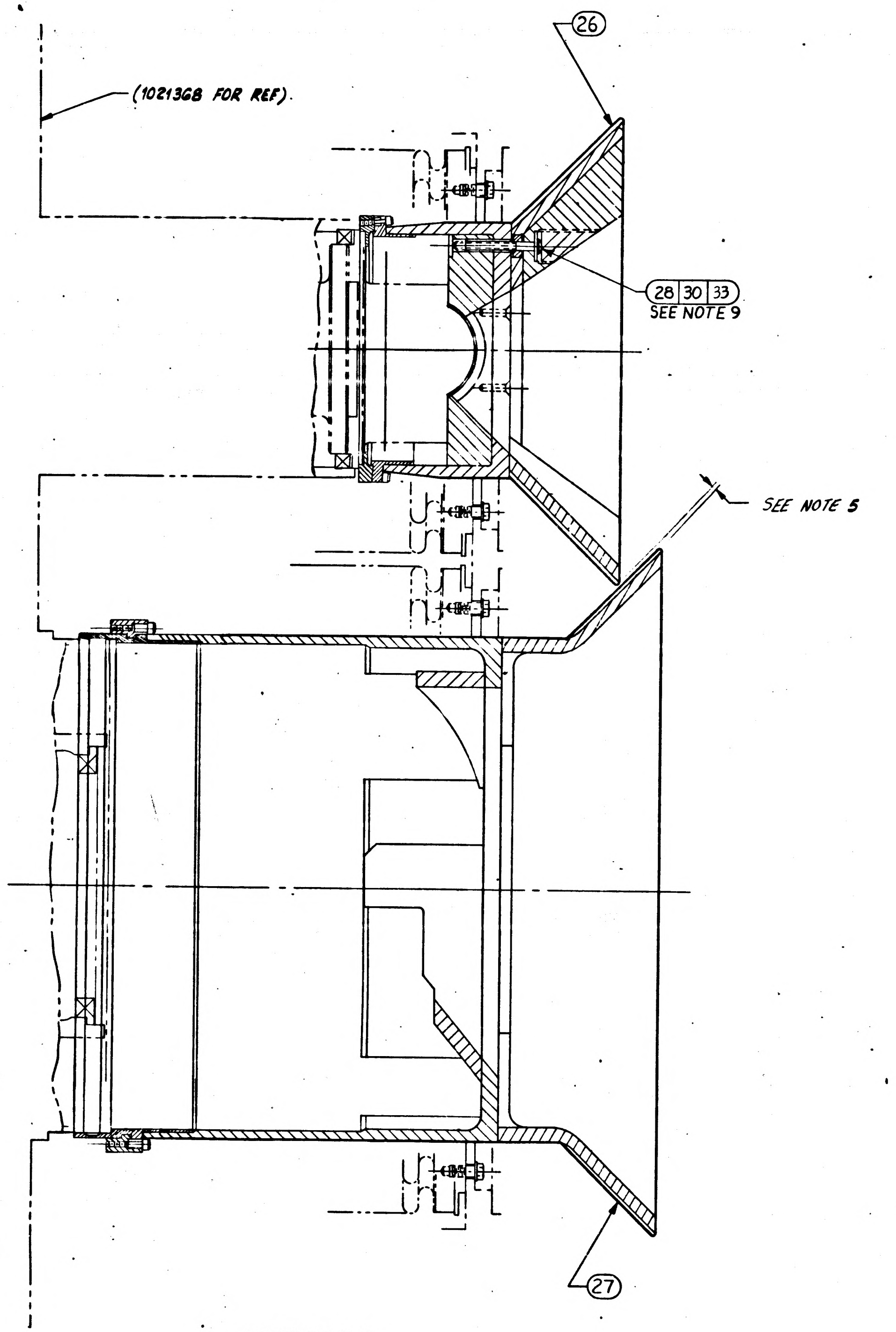
BLOCK II
P/N 1021373-051 CONFIGURATION

UNLESS OTHERWISE SPEC DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION NERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CE HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN D. Ming DATE 3 Oct. 66 CHECKED W. Hill 25 Oct 66 APPROVAL 25 OCT 66 CONTRACT	ASTROSEXTAN PASS THERMAL PR TECT SYSTEM ASS MBL
MATERIAL	NASA APPROVAL	SIZE E CODE IDENT NO. 99974 102 37
APPROVAL	MIT APPROVAL	SCALE FULL SHEET

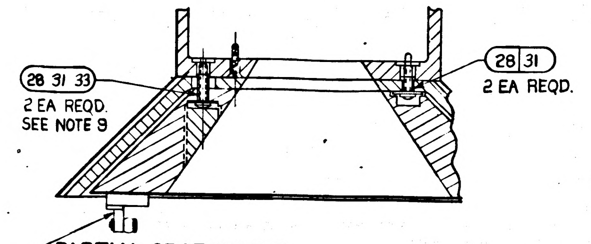
1/1021373

1021373

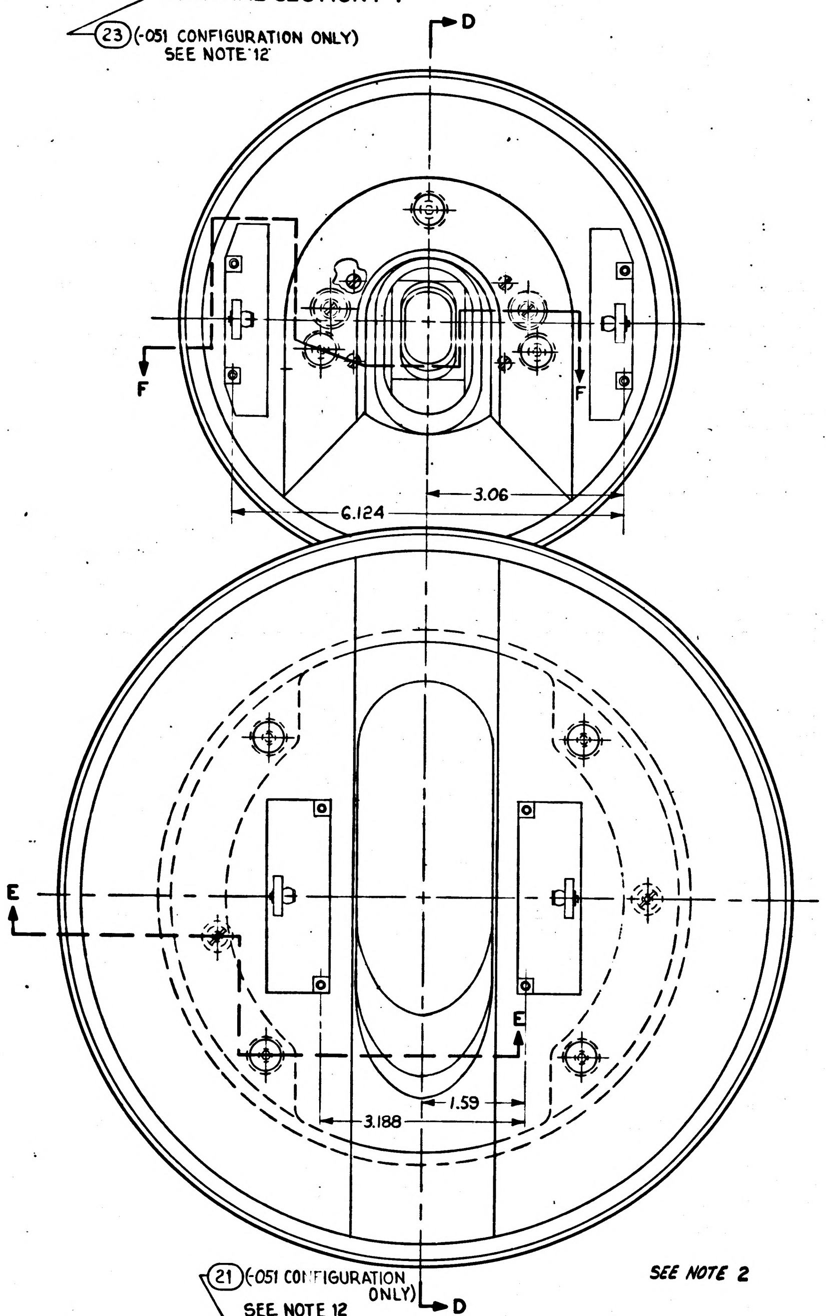
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER EGM 216221		14 NOV 66	JRK EG
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	DG EG
C		REVISED PER TDRR 33015		20 FEB 67	JWE RCG


26
(1021368 FOR REF)
28 30 33
SEE NOTE 9
SEE NOTE 5
27

SECTION D-D

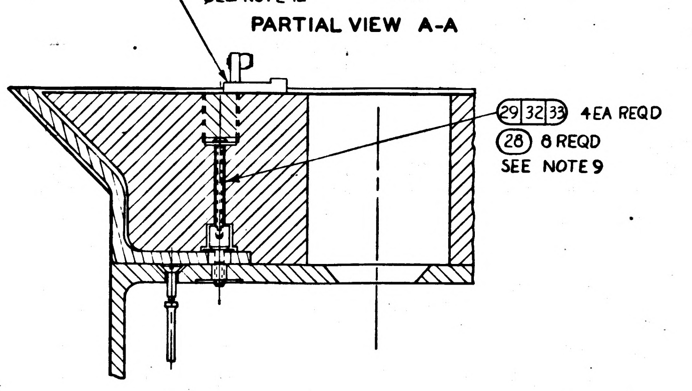

28 31 33
2 EA REQD.
SEE NOTE 9
28 31
2 EA REQD.

PARTIAL SECTION F-F


23 (-051 CONFIGURATION ONLY)
SEE NOTE 12
D
F
F
6.124
3.06
E
E
3.188
1.59
21 (-051 CONFIGURATION ONLY)
SEE NOTE 12
D

SEE NOTE 2

PARTIAL VIEW A-A


29 32 33 4 EA REQD
28 8 REQD
SEE NOTE 9

PARTIAL SECTION E-E

100 SERIES

P/N 1021373-041 CONFIGURATION

BLOCK II

P/N 1021373-051 CONFIGURATION

UNLESS OTHERWISE SPEC
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN D [illegible] DATE 3 OCT. 66
CHECKED W [illegible] 26 Oct 66
APPROVAL [illegible] 25 OCT 66
CONTRACT
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ASTROSEXTANT PASSIVE
THERMAL PROTECTIVE
SYSTEM ASSEMBLY

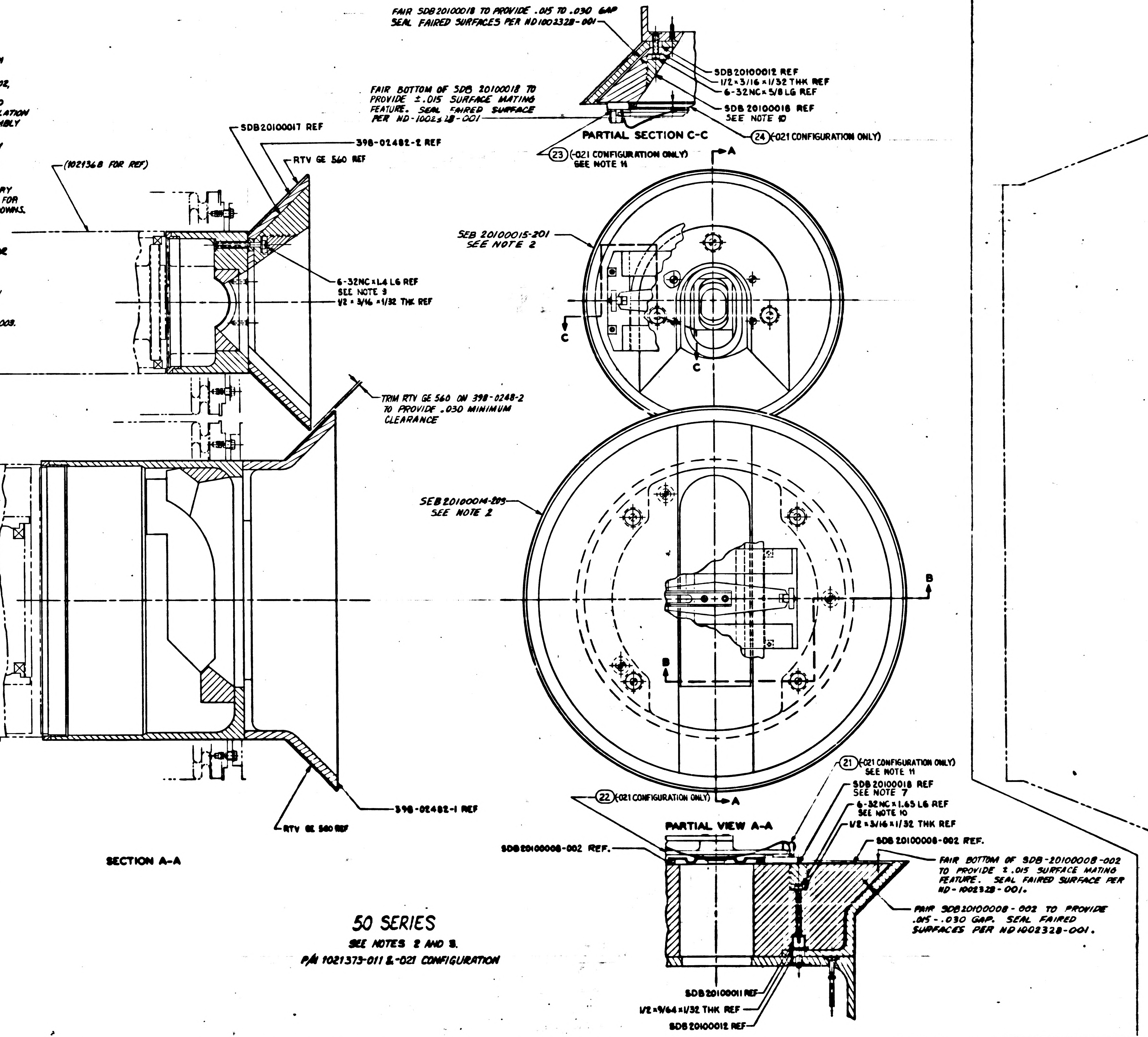
SIZE E
CODE IDENT NO. 99974
1021373
SCALE FULL
SHEET 2 of 2

1021373

2/1021373

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ITEMS SEB-20100014-203 AND SEB-20100015-201 ARE G.F.P
3. PART NUMBERS 398-02482-1, SDB 20100008-002, SDB 20100011, SDB 20100018, 398-02482-2, SDB 20100017, SDB 20100012, AND ASSOCIATED HARDWARE ARE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
4. ITEMS 3,4,5,6,7, 19 AND ASSOCIATED ASSEMBLY HARDWARE SHALL BE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
5. TRIM RTV (1008906) AND APP, AS NECESSARY TO PROVIDE A MINIMUM OF .030 CLEARANCE FOR 360° ROTATION OF SEXTANT AND TELESCOPE CROWNS.
6. FAIR BOTTOM OF ITEM 4 TO FIT ITEM 7 AND BOTTOM OF ITEM 3 TO FIT ITEM 2 AT ASSEMBLY, TO PROVIDE A .015 TO .030 GAP AND A ±.015 SURFACE MATING FEATURE PRIOR TO SHIPPING. SEAL FAIRED SURFACES PER ND 1002328-001
7. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND 1002328-001. FILL TWO (2) HOLES IN PLUG TO WITHIN 0.01 INCH OF SURFACE IN ACCORDANCE WITH ND 1002329-003. APPLY PAINT, ITEM 14, IN ACCORDANCE WITH ND 1002328-002.
8. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND1002328-001. APPLY PAINT, ITEM 16, IN ACCORDANCE WITH ND 1002277.
9. APPLY SEALING AND RETAINING COMPOUND, MIL-S-22473, GRADE C, TO SCREW THREADS.
10. APPLY A THIN COAT OF 1008903 ADHESIVE TO THREAD PRIOR TO INSTALLATION (FINGER TIGHT) TO SPACECRAFT AND BLEND SURFACE TO MATING FEATURE AFTER INSTALLATION.
11. BOND ITEM 21 TO ITEM 3, ITEM 23 TO ITEM 4 ITEM 21 TO ITEM SDB20100008-002 AND ITEM 23 TO ITEM SDB20100017 USING ITEM 25 P/N 1008903 (EPON954), PER ND1002329-001 REMOVE EXCESS ADHESIVE.
12. ~~BOND ITEM 21 TO ITEM 27 AND ITEM 23 TO ITEM 26 USING ITEM 25, P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.~~
13. ORIENTATION OF TELESCOPE AND SEXTANT ARE FOR DRAWING CLARITY ONLY AND DOES NOT REPRESENT POSITION OF EACH WHEN EJECTABLE COVERS ARE ATTACHED.
14. SELECT SPACER, PLATES, ITEMS (39) AND (40) AS REQUIRED TO OBTAIN .188 TO .250 CLEARANCE BETWEEN TELESCOPE CROWN AND SPACECRAFT INNER ABLATOR. IF ANY SPACERS, ITEMS (39) OR (40) ARE REQUIRED, USE SCREWS, ITEM (35) IN PLACE OF ITEM (30) AND USE SCREWS, ITEM (34) IN PLACE OF ITEM (31).
15. SELECT SPACER, PLATES, ITEMS (37) AND (38) AS REQUIRED TO OBTAIN .188 TO .250 CLEARANCE BETWEEN SEXTANT CROWN AND SPACECRAFT INNER ABLATOR. IF NO SPACERS ARE REQUIRED OR IF ONLY ONE .062 THICK SPACER, ITEM (37) IS REQUIRED, USE SPECIAL SCREWS, ITEM (32). IF MORE THAN ONE SPACER, ITEM (37) IS REQUIRED OR IF SPACER, ITEM (38) OR ANY COMBINATION OF SPACERS, ITEMS (37) AND (38) IS REQUIRED, USE SPECIAL SCREWS, ITEM (36).


FAIR SDB20100018 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACES PER ND1002328-001
SDB20100012 REF
1/2 × 3/16 × 1/32 THK REF
6-32NC × 5/8 LG REF
SDB 20100018 REF SEE NOTE 10
FAIR BOTTOM OF SDB 20100018 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
PARTIAL SECTION C-C
(24) (-021 CONFIGURATION ONLY)
(23) (-021 CONFIGURATION ONLY) SEE NOTE 11
SDB20100017 REF
398-02482-2 REF
RTV GE 560 REF
(1021368 FOR REF)
6-32NC × L4 LG REF SEE NOTE 3
1/2 × 3/16 × 1/32 THK REF
TRIM RTV GE 560 ON 398-0248-2 TO PROVIDE .030 MINIMUM CLEARANCE
SEB 20100015-201 SEE NOTE 2
SEB 20100014-203 SEE NOTE 2
A
C
C
B
B
398-02482-1 REF
RTV GE 560 REF
SECTION A-A
(21) (-021 CONFIGURATION ONLY) SEE NOTE 11
(22) (-021 CONFIGURATION ONLY)
A
PARTIAL VIEW A-A
SDB 20100018 REF SEE NOTE 7
6-32NC × 1.65 LG REF SEE NOTE 10
1/2 × 3/16 × 1/32 THK REF
SDB 20100008-002 REF.
SDB20100008-002 REF.
FAIR BOTTOM OF SDB-20100008-002 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001.
FAIR SDB20100008-002 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001.
SDB20100011 REF
1/2 × 9/64 × 1/32 THK REF
SDB20100012 REF
PARTIAL SECTION B-B

50 SERIES

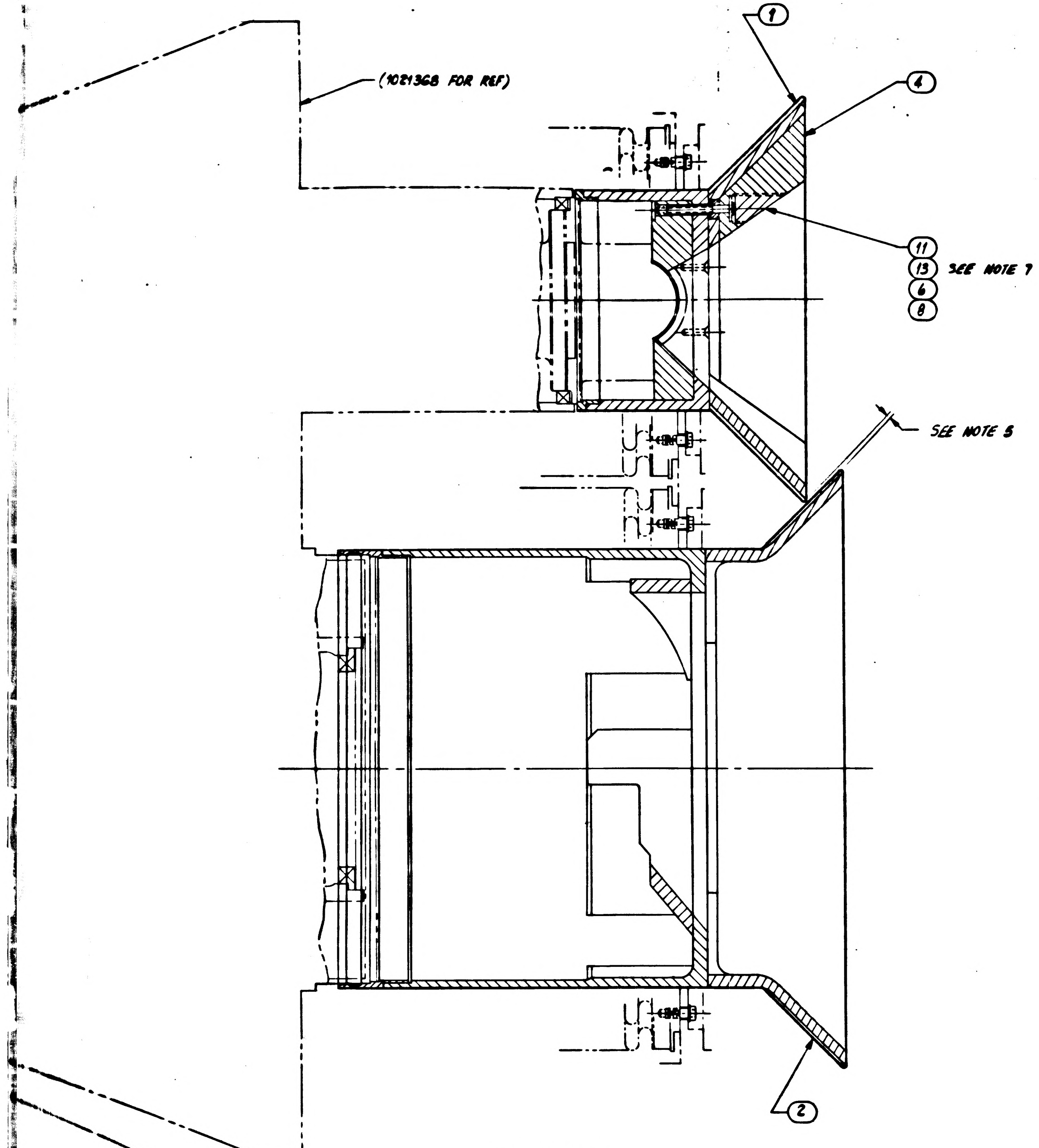
SEE NOTES 2 AND 3.

P/N 1021373-011 & -021 CONFIGURATION

1021373 E SH 1 OF 2

1/1021373

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECR 216221		14 NOV	JRK
B		INITIAL RELEASE CLASS A PER TDRR 32202		12/	
C		REVISED PER TDRR 33015		FEB 67	
D		REVISED PER TDRR 33016		7 MAR 67	
E		REVISED PER TDRR 33017		8 MAR 67	


(1021368 FOR REF)
1
4
11
13 SEE NOTE 7
6
8
SEE NOTE 5
2

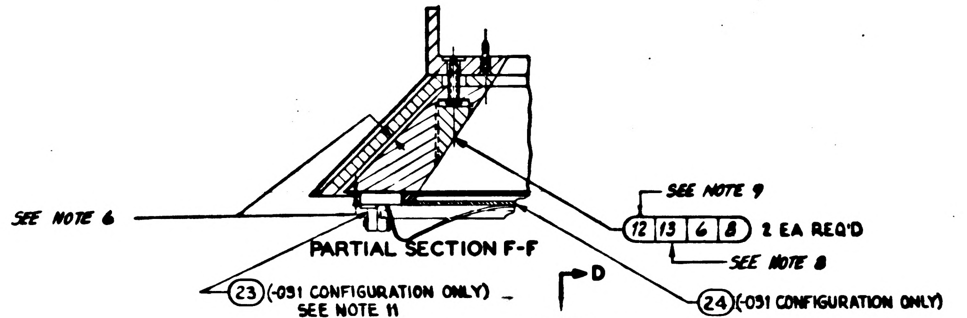
SECTION D-D

20100008-002
SURFACE MATING
SURFACE PER

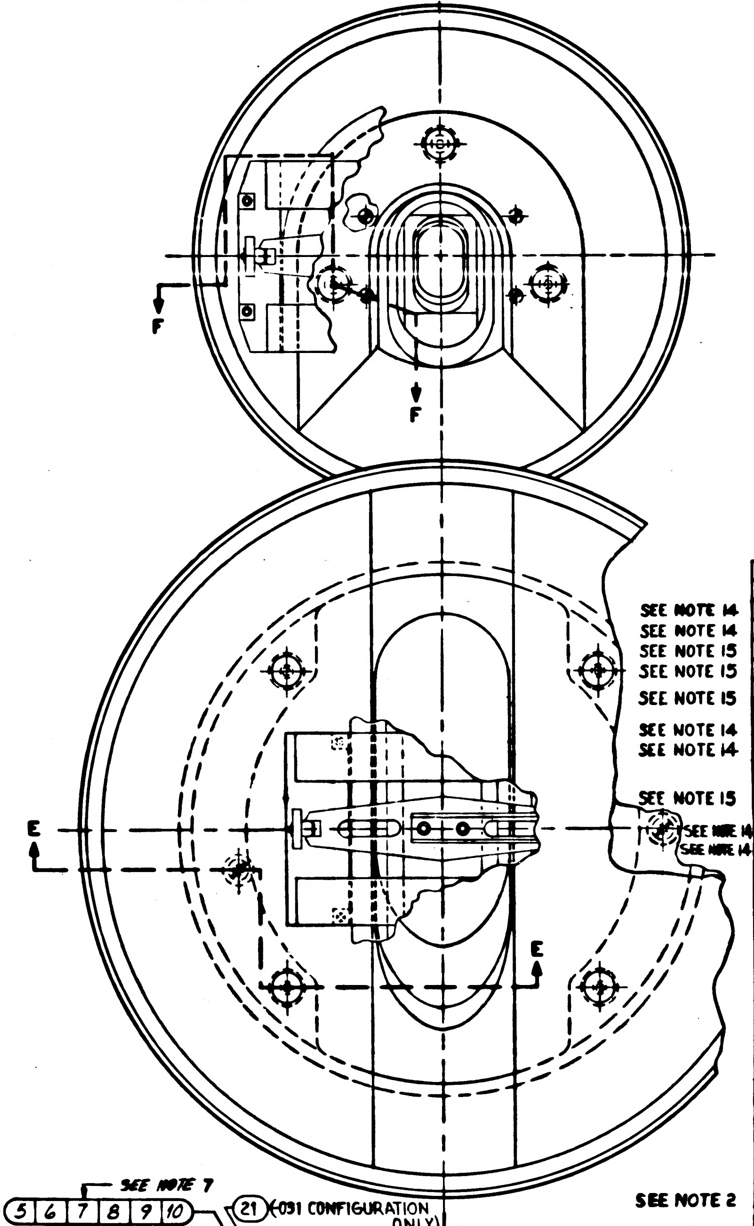
TO PROVIDE
FA.RED
.0330-001.

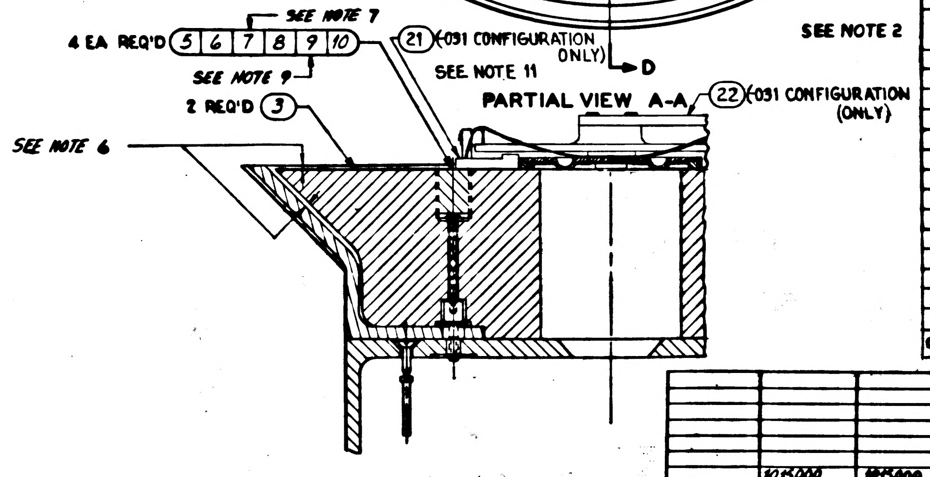
100 SERIES

P/N 1021373-031 CONFIGURATION


SEE NOTE 6
SEE NOTE 9
12 13 6 8 2 EA REQ'D
SEE NOTE 8
23 (-031 CONFIGURATION ONLY)
SEE NOTE 11
24 (-031 CONFIGURATION ONLY)
D

PARTIAL SECTION F-F


F
F
SEE NOTE 14
SEE NOTE 14
SEE NOTE 15
SEE NOTE 15
SEE NOTE 15
SEE NOTE 14
SEE NOTE 14
SEE NOTE 15
SEE NOTE 14
SEE NOTE 14
E
E


SEE NOTE 7
4 EA REQ'D 5 6 7 8 9 10
SEE NOTE 9
2 REQ'D 3
SEE NOTE 6
21 (-031 CONFIGURATION ONLY)
SEE NOTE 11
D
22 (-031 CONFIGURATION (ONLY)

PARTIAL VIEW A-A

SEE NOTE 2

PARTIAL SECTION E-E

051	041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1						42	1021377-021	CROWN HALF & PLUG ASSY (TELESCOPE)
1						41	1021378-021	CROWN HALF & PLUG ASSY (SEXTANT)
	1					40	2021265-002	SPACER, PLATE, (TELESCOPE)
	2					39	2021265-001	SPACER, PLATE, (TELESCOPE)
	1					38	2021266-002	SPACER, PLATE, (SEXTANT)
	2					37	2021266-001	SPACER, PLATE, (SEXTANT)
	4					36	1008488-001	SCREW, SLOTTED, SPECIAL SEXTANT COVER
	1					35	1008487-005	SCREW, CAP, SLOTTED HEAD
	4					34	1008487-004	SCREW, CAP, SLOTTED HEAD
7	7					33	1008493	INSULATOR
4	4					32	1008488-000	SCREW SLOTTED, SPECIAL SEXTANT COVER
4	4					31	1008487-003	SCREW, CAP SLOTTED HEAD
1	1					30	1008487-002	SCREW, CAP SLOTTED HEAD
4	4					29	1008487-001	SCREW, CAP SLOTTED HEAD
13	11					28	1008486	WASHER, FLAT
≠	1					27	1021378-011	CROWN HALF AND PLUG ASSY SEXTANT (MATCHED ASSY)
≠	1					26	1021377-011	CROWN HALF AND PLUG ASSY TELESCOPE (MATCHED ASSY)
~~AR~~		AR	AR			25	1008903	ADHESIVE, EPOXY
		1	1			24	1021352-011	DUST COVER ASSY (SCT)
≢		2	2			23	1021358-011	RETAINER, DUST COVER
		1	1			22	1021362-011	DUST COVER ASSY (SXT)
≢		2	2			21	1021358-021	RETAINER, DUST COVER
		AR	AR	AR		20	1008906	SILICONE RUBBER
		AR	AR	AR		19	1008913	CURING AGENT
		AR	AR	AR		18	1008912	FILLER
		AR	AR	AR		17	1008911	EPOXY RESIN
		AR	AR	AR		16	1012543-001	LIGHT DIFFUSING COATING KIT
			1	1		15	1021373-001	ASTROSEXTANT PASSIVE THERMAL PROTECTIVE ASSY (SERIES 50)
		AR	AR	AR		14	1008910	PAINT, GRAY
		3				13	1021322-002	PLUG
		2				12	1021339-003	SCREW, CAP, SOC. HD.
		1				11	1021339-002	SCREW, CAP, SOC. HD.
		4				10	1021341-002	WASHER
		4				9	1021339-001	SCREW, CAP, SOC. HD.
		7				8	1021341-001	WASHER
		4				7	1021322-001	PLUG
		7				6	1021324	INSULATOR
		4				5	1021326	SCREW, SLOTTED, SPL, SEXTANT [illegible]
		1				4	1021338	FILLET, PROTECTOR, TELESCOPE COVER
		2				3	1021320	CROWN, HALF, UPPER, SEXTANT COVER
		1				2	1021329	CROWN, HALF, LWR, SEXTANT COVER (W/SEP ASSY
		1				1	1021337	CROWN, HALF, LWR, TELESCOPE COVER (W/SEP ASSY

QUANTITY REQUIRED

LIST OF PARTS AND MATERIALS

APPLICABLE DASH NO.	NEXT ASSY	USED ON
	1015000	1015000
	APPLICATION	

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

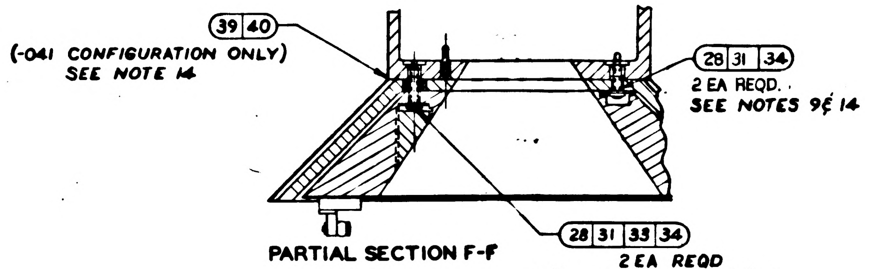
AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN 3 OCT 66
CHECKED 4-22-66
APPROVAL
CONTRACT
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ASTROSEXTANT PASSIVE
THERMAL PROTECTIVE
SYSTEM ASSEMBLY

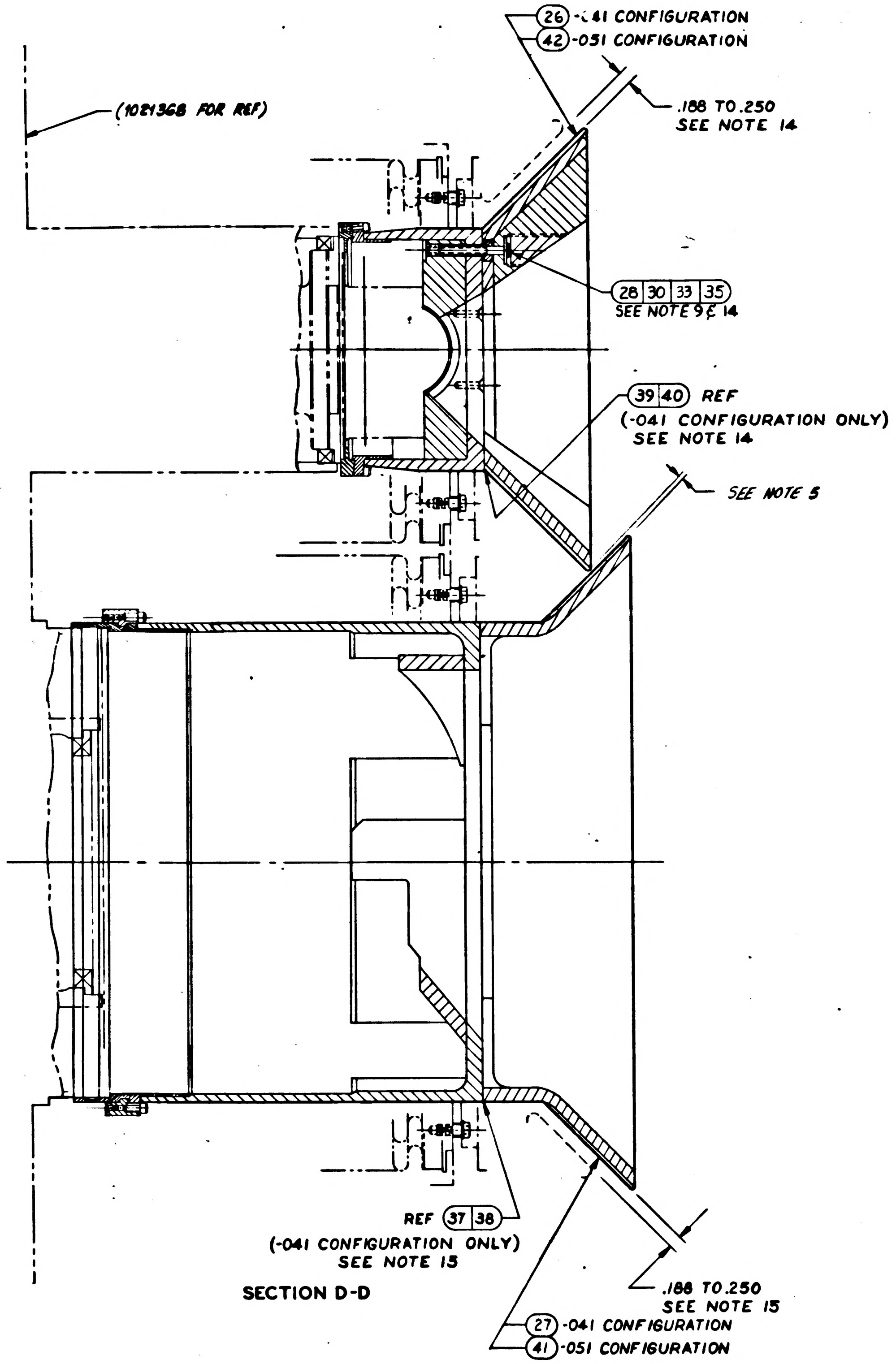
SIZE J2
CODE IDENT NO. 99974
1021373
SCALE FULL
SHEET 1 OF 2

		. REVISIONS	
SYM	ZONE	DESCRIPTION	CHG
A		REVISED PER [illegible] 216281	
B		INITIAL RELEASE CLASS A PER TDRR [illegible]	
C		REVISED PER TDRR 33075	
D		REVISED PER TDRR 33016	
E		REVISED PER TDRR 33017	



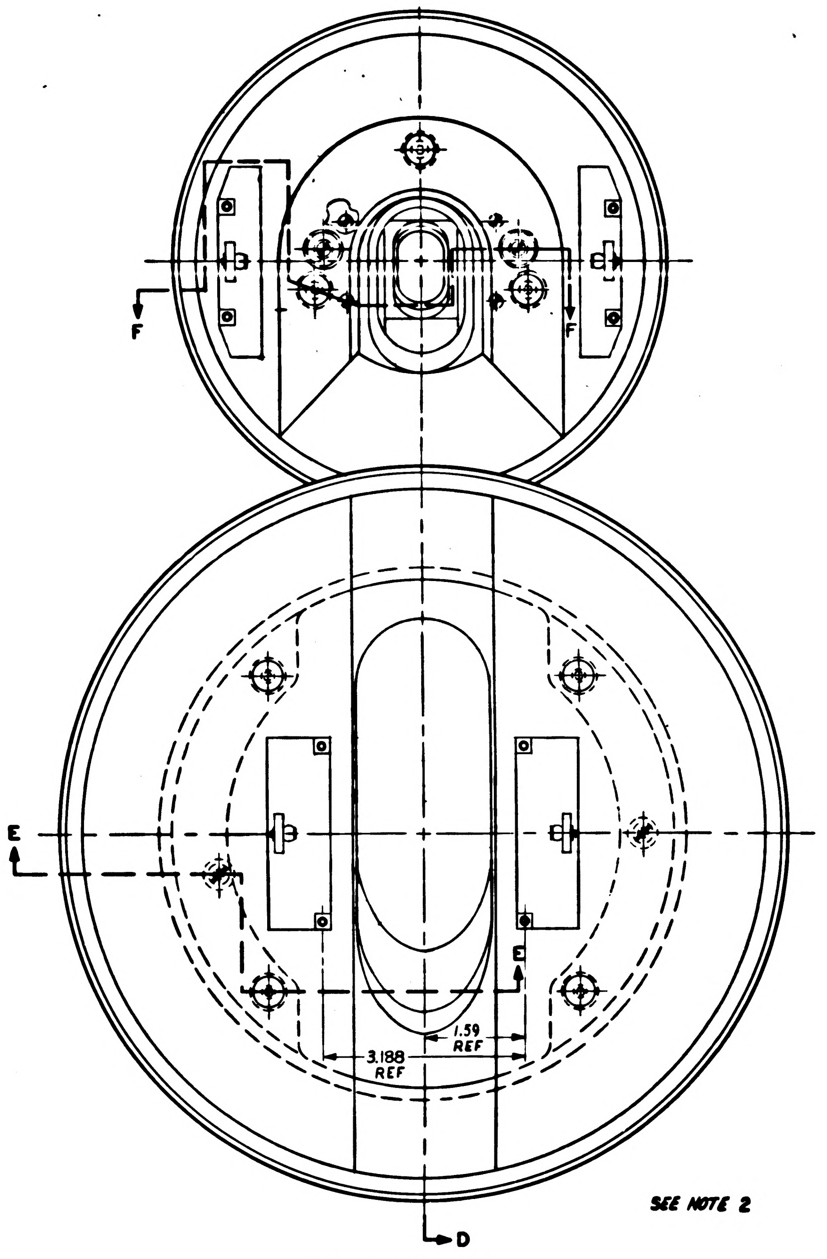
39 40
(-041 CONFIGURATION ONLY)
SEE NOTE 14
28 31 34
2 EA REQD.
SEE NOTES 9& 14
28 31 33 34
2 EA REQD
SEE NOTES 9& 14

PARTIAL SECTION F-F



26 -041 CONFIGURATION
42 -051 CONFIGURATION
(1021368 FOR REF)
.188 TO .250
SEE NOTE 14
28 30 33 35
SEE NOTE 9& 14
39 40 REF
(-041 CONFIGURATION ONLY)
SEE NOTE 14
SEE NOTE 5
REF 37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15
.188 TO .250
SEE NOTE 15
27 -041 CONFIGURATION
41 -051 CONFIGURATION

SECTION D-D



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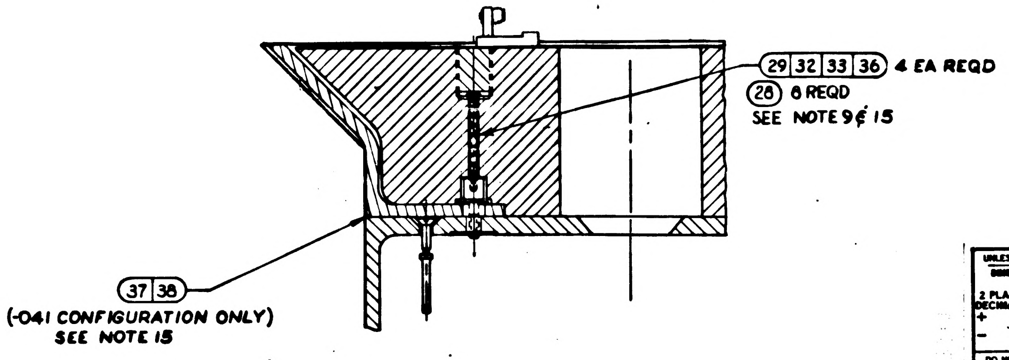
1.59
REF
3.188
REF
SEE NOTE 2

PARTIAL VIEW A-A



29 32 33 36 4 EA REQD
28 8 REQD
SEE NOTE 9& 15
37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15

PARTIAL SECTION E-E

100 SERIES (P/N 1021373-041 CONFIGURATION)
AND
BLOCK II (P/N 1021373-051 CONFIGURATION)

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN D. Bau DATE 3 Oct 66
CHECKED W. Lill 26 Oct 66
APPROVED [illegible] 28 Oct 66
CONTRACT
NASA APPROVAL
MIT APPROVAL

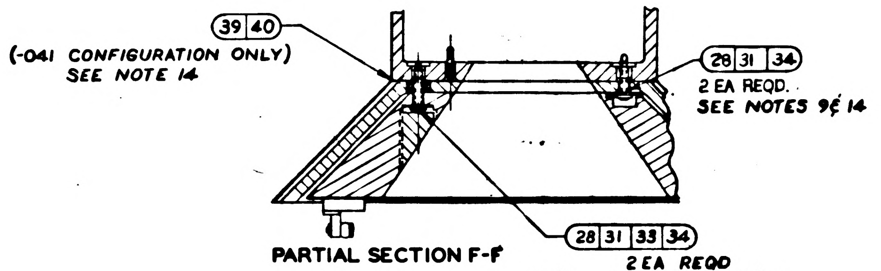
MANNED SPACECRAFT C
HOUSTON, TE

ASTRO SEXT
THERMAL
SYSTEM A

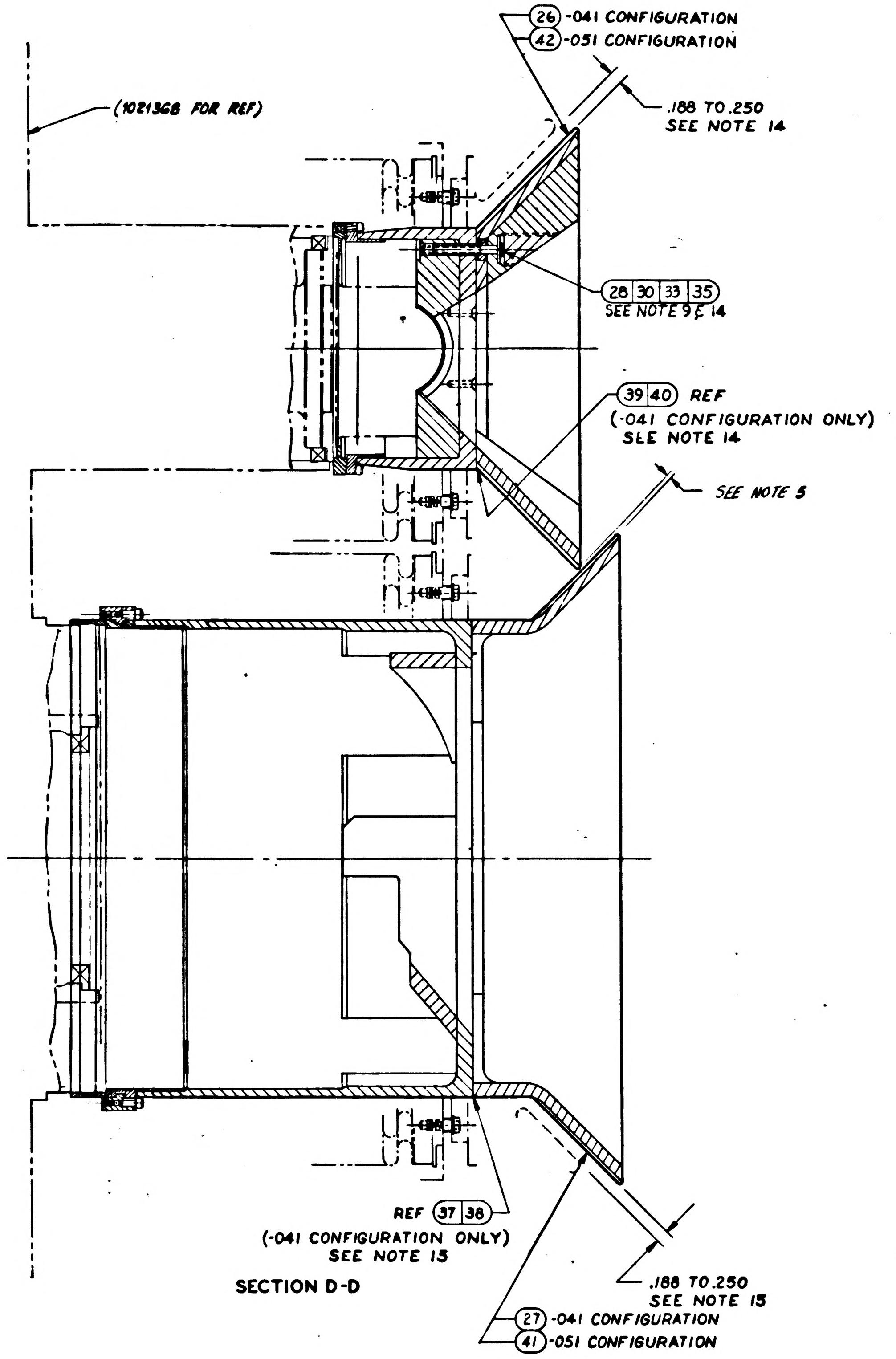
SIZE E
CODE IDENT NO. 99974
102
SCALE FULL

1/1021373

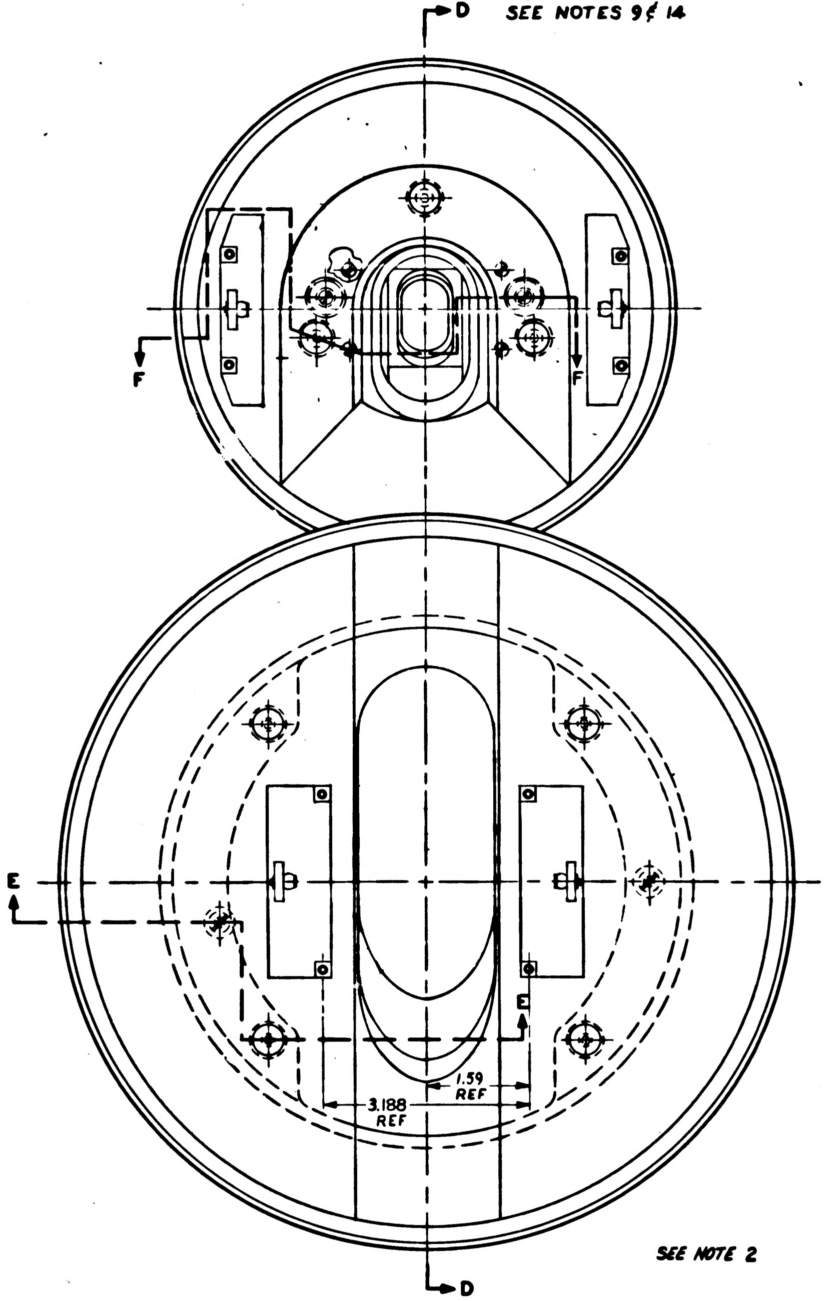
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECN 216221		2 NOV 66	JRA
B		INITIAL RELEASE CLASS A PER TDRR			DG
C		REVISED PER TDRR 33075			JWE
D		REVISED PER TDRR 33016		7 MAR 67	
E		REVISED PER TDRR 33017		8 MAR 67	


39 40
(-041 CONFIGURATION ONLY)
SEE NOTE 14
28 31 34
2 EA REQD.
SEE NOTES 9 & 14
28 31 33 34
2 EA REQD
SEE NOTES 9 & 14

PARTIAL SECTION F-F


26 -041 CONFIGURATION
42 -051 CONFIGURATION
(1021368 FOR REF)
.188 TO .250
SEE NOTE 14
28 30 33 35
SEE NOTE 9 & 14
39 40 REF
(-041 CONFIGURATION ONLY)
SEE NOTE 14
SEE NOTE 5
REF 37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15
.188 TO .250
SEE NOTE 15
27 -041 CONFIGURATION
41 -051 CONFIGURATION

SECTION D-D


D
F
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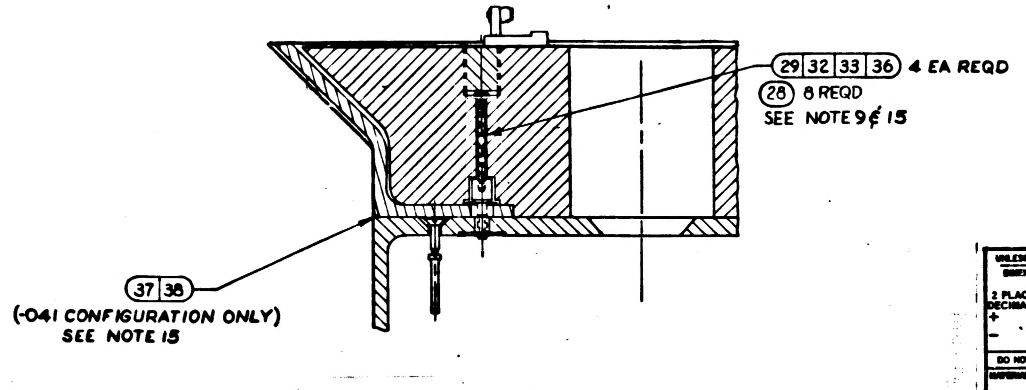
E
E
1.59
REF
3.188
REF
D
SEE NOTE 2

PARTIAL VIEW A-A

100 SERIES (P/N 1021373-041 CONFIGURATION)
AND
BLOCK II (P/N 1021373-051 CONFIGURATION)


29 32 33 36 4 EA REQD
28 8 REQD
SEE NOTE 9 & 15
37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15

PARTIAL SECTION E-E

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN DATE
CHECKED 25 Oct 66
APPROVED
CONTRACT
NASA APPROVAL
MIT APPROVAL

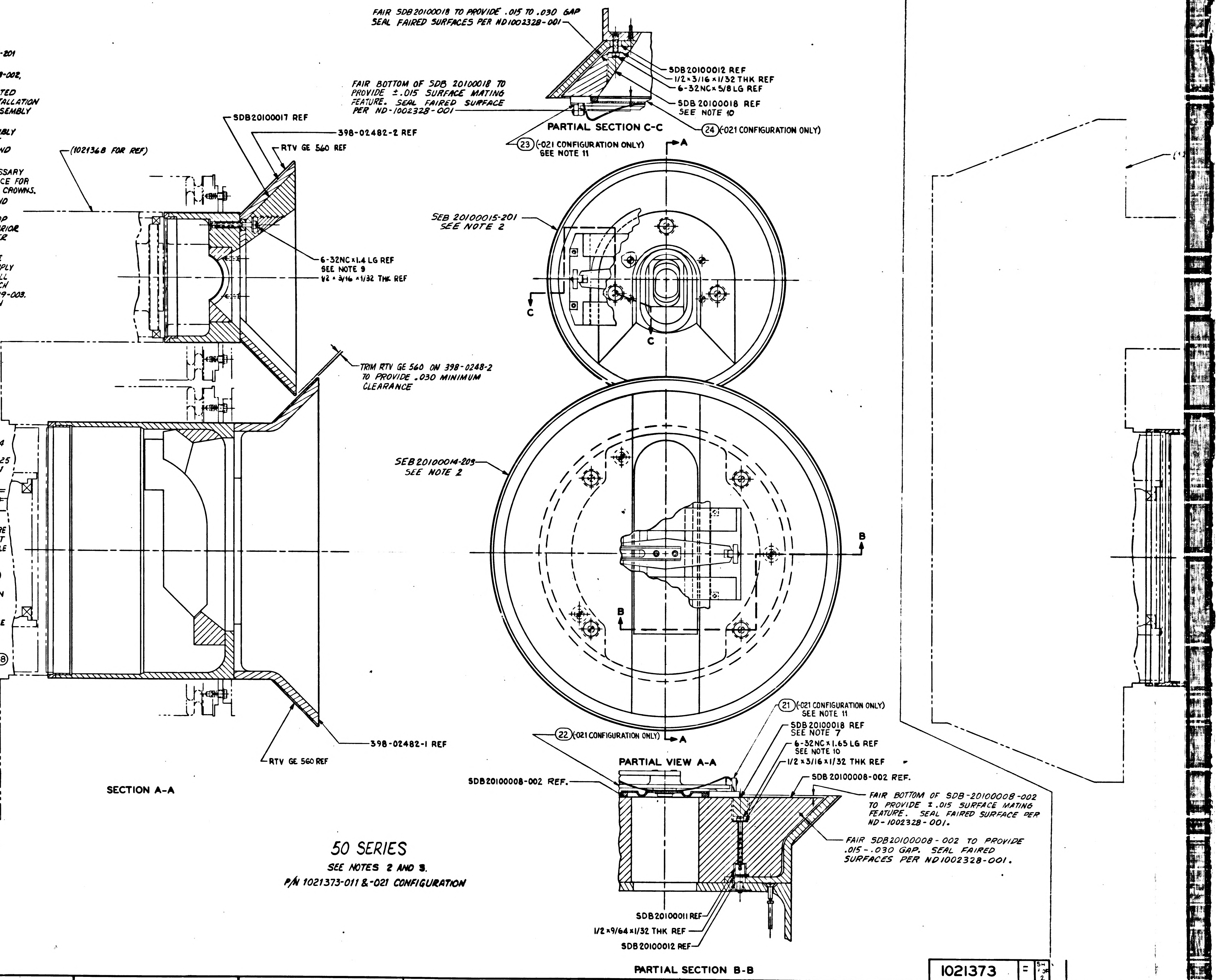
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ASTROSEXTANT PASSIVE
THERMAL PROTECTIVE
SYSTEM ASSEMBLY

SIZE E
CODE IDENT NO. 99974
1021373
SCALE FULL
SHEET 2 OF 2

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ITEMS SEB-20100014-203 AND SEB-20100015-201 ARE G.F.P
3. PART NUMBERS 398-02482-1, SDB 20100008-002, SDB 20100011, SDB 20100018, 398-02482-2, SDB 20100017, SDB 20100012, AND ASSOCIATED HARDWARE ARE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
4. ITEMS 3,4,5,6,7,13 AND ASSOCIATED ASSEMBLY HARDWARE SHALL BE INSTALLED AFTER THE INSTALLATION OF THE NAVIGATION BASE AND OPTICS ASSEMBLY IN THE SPACECRAFT.
5. TRIM RTV (1008906) AND RPP, AS NECESSARY TO PROVIDE A MINIMUM OF .030 CLEARANCE FOR 360° ROTATION OF SEXTANT AND TELESCOPE CROWNS.
6. FAIR BOTTOM OF ITEM 4 TO FIT ITEM 1 AND BOTTOM OF ITEM 3 TO FIT ITEM 2 AT ASSEMBLY, TO PROVIDE A .015 TO .030 GAP AND A ±.015 SURFACE MATING FEATURE PRIOR TO SHIPPING. SEAL FAIRED SURFACES PER ND 1002328-001
7. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND 1002328-001. FILL TWO (2) HOLES IN PLUG TO WITHIN 0.01 INCH OF SURFACE IN ACCORDANCE WITH ND 1002329-003. APPLY PAINT, ITEM 14, IN ACCORDANCE WITH ND 1002328-002.
8. BLEND PLUG SURFACE TO MATING FEATURE AFTER INSTALLATION TO SPACECRAFT. APPLY SEALER TO SURFACE PER ND1002328-001. APPLY PAINT, ITEM 16, IN ACCORDANCE WITH ND 1002277.
9. APPLY SEALING AND RETAINING COMPOUND, MIL-S-22473, GRADE C, TO SCREW THREADS.
10. APPLY A THIN COAT OF 1008903 ADHESIVE TO THREAD PRIOR TO INSTALLATION (FINGER TIGHT) TO SPACECRAFT AND BLEND SURFACE TO MATING FEATURE AFTER INSTALLATION.
11. BOND ITEM 21 TO ITEM 3, ITEM 23 TO ITEM 4 ITEM 21 TO ITEM SDB20100008-002 AND ITEM 23 TO ITEM SDB20100017 USING ITEM 25 P/N 1008903 (EPON954), PER ND1002329-001 REMOVE EXCESS ADHESIVE.
12. ~~BOND ITEM 21 TO ITEM 27 AND ITEM 23 TO ITEM 26 USING ITEM 25, P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.~~
13. ORIENTATION OF TELESCOPE AND SEXTANT ARE FOR DRAWING CLARITY ONLY AND DOES NOT REPRESENT POSITION OF EACH WHEN EJECTABLE COVERS ARE ATTACHED.
14. SELECT SPACER, PLATES, ITEMS ㊴ AND ㊵ AS REQUIRED TO OBTAIN .188 TO .250 CLEARANCE BETWEEN TELESCOPE CROWN AND SPACECRAFT INNER ABLATOR, IF ANY SPACERS, ITEMS ㊴ OR ㊵ ARE REQUIRED, USE SCREWS, ITEM ㉟ IN PLACE OF ITEM ㉚ AND USE SCREWS, ITEM ㉞ IN PLACE OF ITEM ㉛.
15. SELECT SPACER, PLATES, ITEMS ㊲ AND ㊳ AS REQUIRED TO OBTAIN .188 TO .250 CLEARANCE BETWEEN SEXTANT CROWN AND SPACECRAFT INNER ABLATOR. IF NO SPACERS ARE REQUIRED OR IF ONLY ONE .062 THICK SPACER, ITEM ㊲ IS REQUIRED, USE SPECIAL SCREWS, ITEM ㉜. IF MORE THAN ONE SPACER, ITEM ㊲ IS REQUIRED OR IF SPACER, ITEM ㊳ OR ANY COMBINATION OF SPACERS, ITEMS ㊲ AND ㊳ IS REQUIRED, USE SPECIAL SCREWS, ITEM ㊱.



FAIR SDB 20100018 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACES PER ND1002328-001
FAIR BOTTOM OF SDB 20100018 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
SDB20100012 REF
1/2 × 3/16 × 1/32 THK REF
6-32NC × 5/8 LG REF
SDB 20100018 REF SEE NOTE 10
PARTIAL SECTION C-C
㉔ (-021 CONFIGURATION ONLY)
㉓ (-021 CONFIGURATION ONLY) SEE NOTE 11
SDB20100017 REF
398-02482-2 REF
RTV GE 560 REF
(1021368 FOR REF)
6-32NC × 1.4 LG REF SEE NOTE 9
1/2 × 3/16 × 1/32 THK REF
TRIM RTV GE 560 ON 398-0248-2 TO PROVIDE .030 MINIMUM CLEARANCE
SEB 20100015-201 SEE NOTE 2
SEB 20100014-203 SEE NOTE 2
A
C
B
398-02482-1 REF
RTV GE 560 REF
SECTION A-A
㉑ (-021 CONFIGURATION ONLY) SEE NOTE 11
㉒ (-021 CONFIGURATION ONLY)
PARTIAL VIEW A-A
SDB 20100018 REF SEE NOTE 7
6-32NC × 1.65 LG REF SEE NOTE 10
1/2 × 3/16 × 1/32 THK REF
SDB 20100008-002 REF.
SDB20100008-002 REF.
FAIR BOTTOM OF SDB-20100008-002 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001.
FAIR SDB20100008-002 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001.
SDB20100011 REF
1/2 × 9/64 × 1/32 THK REF
SDB20100012 REF
PARTIAL SECTION B-B

50 SERIES

SEE NOTES 2 AND 3.

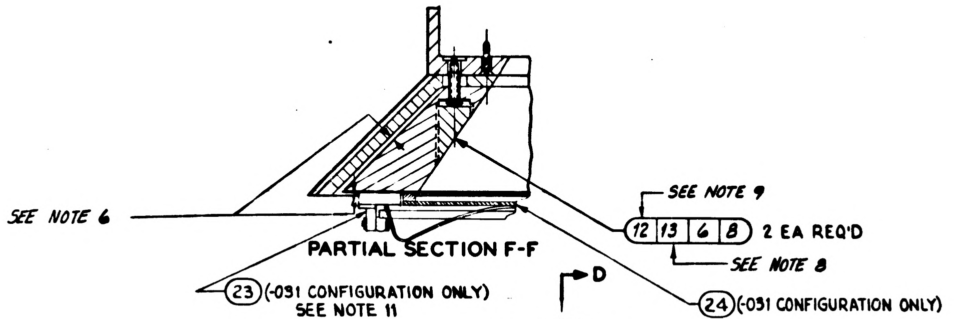
P/N 1021373-011 & -021 CONFIGURATION

1021373 | SH 1 OF 2

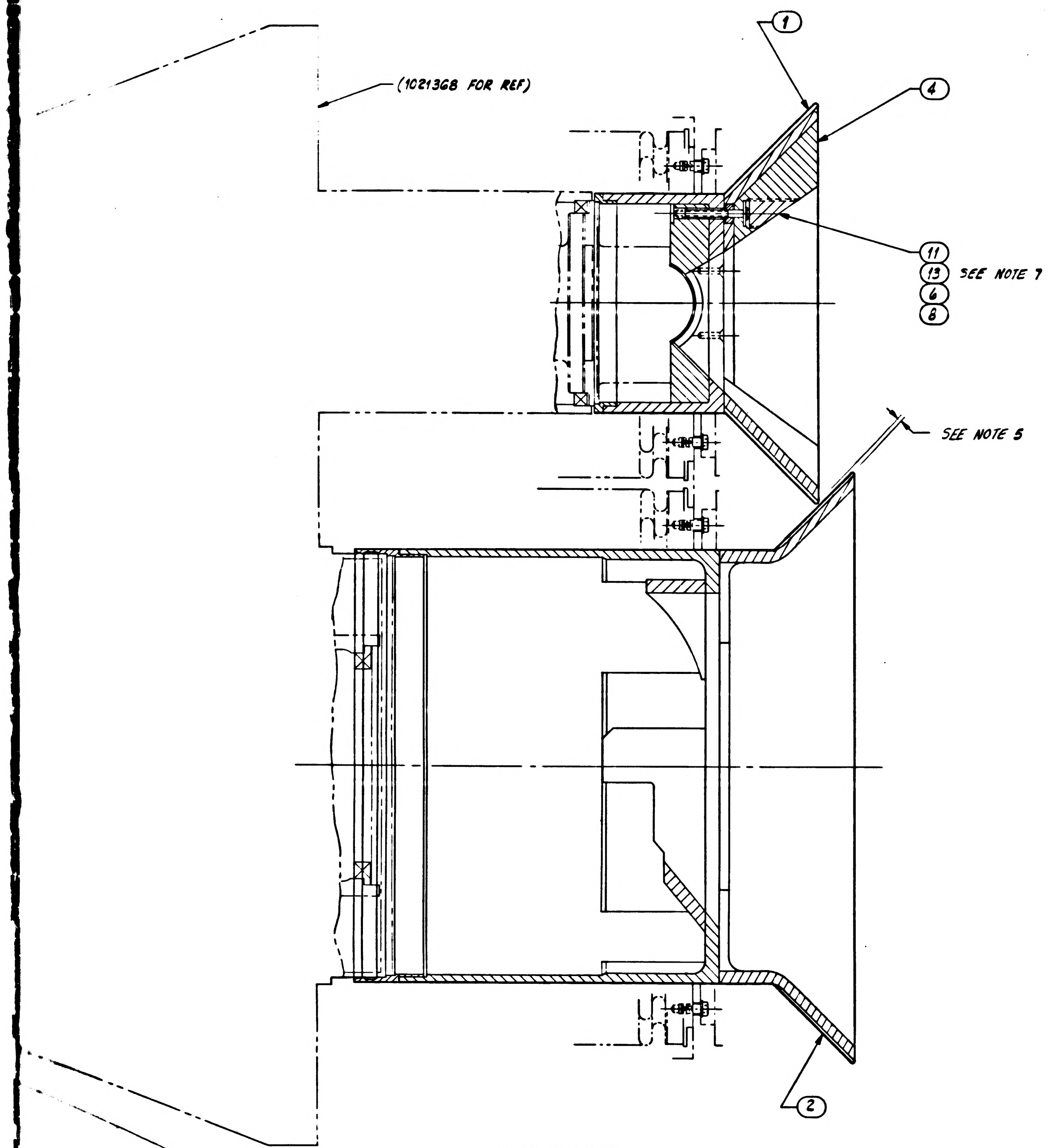
1/1021373

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECA 216221		14 NOV 66	JRK EJ
B		INITIAL RELEASE CLASS A PER TDRR 32202		12 66	DS EG
C		REVISED PER TDRR 33015		28 FEB 67	JWR RCJ
D		REVISED PER TDRR 33016		7 MAR 67	
E		REVISED PER TDRR 33017		8 MAR 67	
F		REVISED PER TDRR 33981		2 AUG 67	ES KM


SEE NOTE 6
SEE NOTE 9
12 13 6 8 2 EA REQ'D
SEE NOTE 8
23 (-031 CONFIGURATION ONLY) SEE NOTE 11
24 (-031 CONFIGURATION ONLY)

PARTIAL SECTION F-F


(1021368 FOR REF)
1
4
11
13 SEE NOTE 7
6
8
SEE NOTE 5
2

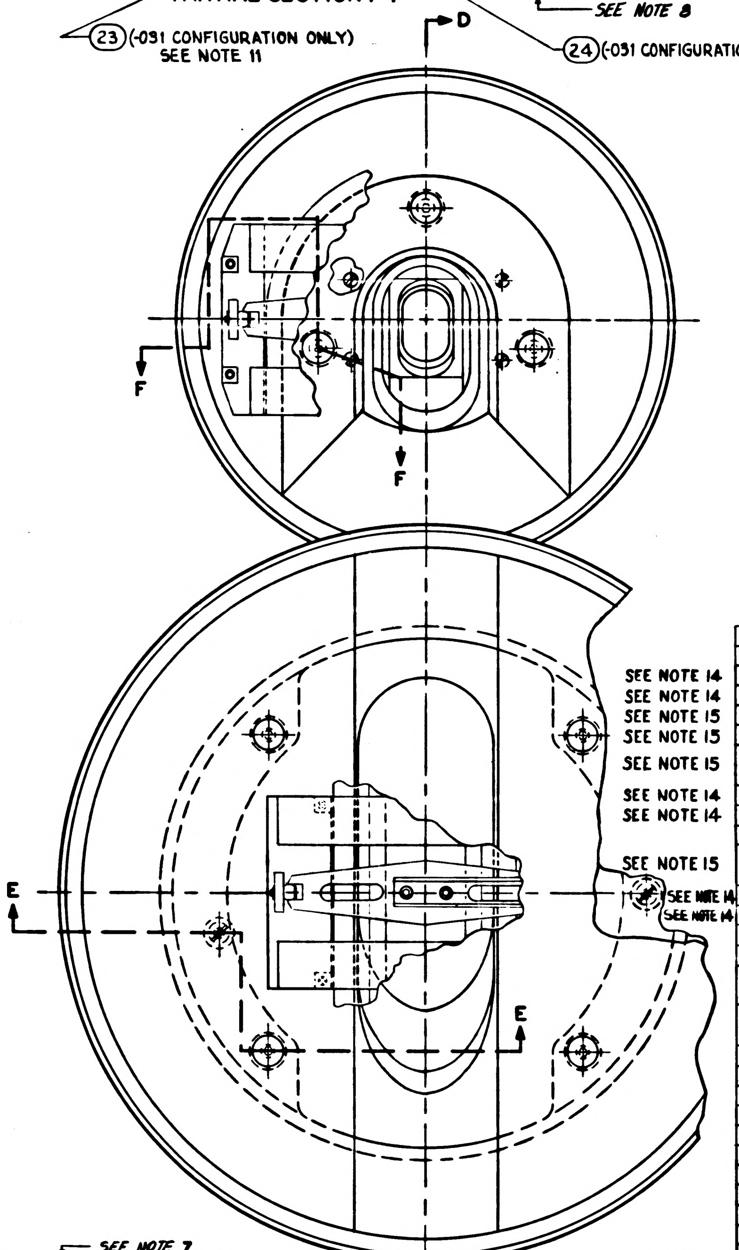
SECTION D-D

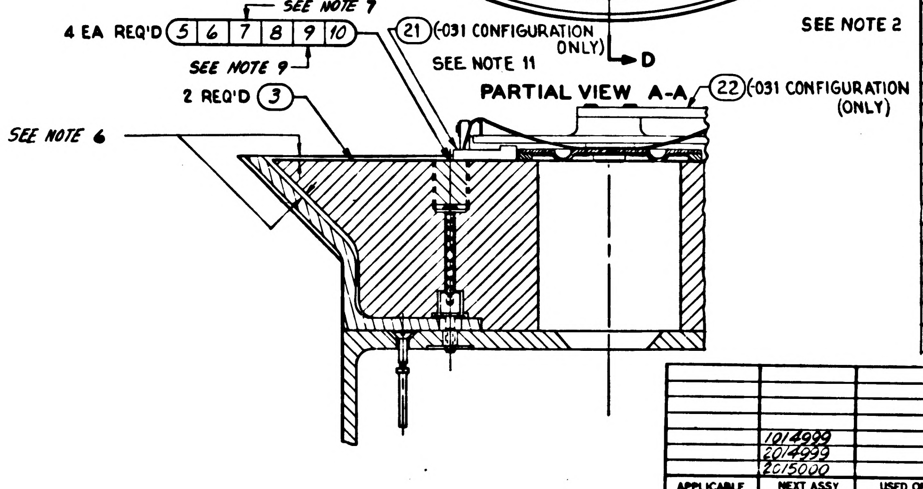
DB 2010CC8-002
SURFACE MATING
INED SURFACE PER

TO PROVIDE
FAIRED
08328-001.

100 SERIES

P/N 1021373-031 CONFIGURATION


D
F
F
E
E
SEE NOTE 14
SEE NOTE 14
SEE NOTE 15
SEE NOTE 15
SEE NOTE 15
SEE NOTE 14
SEE NOTE 14
SEE NOTE 15
SEE NOTE 14
SEE NOTE 14
SEE NOTE 2


SEE NOTE 7
4 EA REQ'D 5 6 7 8 9 10
21 (-031 CONFIGURATION ONLY)
D
SEE NOTE 9
SEE NOTE 11
2 REQ'D 3
22 (-031 CONFIGURATION (ONLY)
SEE NOTE 6

PARTIAL VIEW A-A

PARTIAL SECTION E-E

LIST OF PARTS AND MATERIALS

051	041	031	021	011	EFFECTIVITY	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1						42	1021377-021	CROWN HALF & PLUG ASSY (TELESCOPE)
1						41	1021378-031	CROWN HALF & PLUG ASSY (SEXTANT)
	1					40	2021265-002	SPACER, PLATE, (TELESCOPE)
	2					39	2021265-001	SPACER, PLATE, (TELESCOPE)
	1					38	2021266-002	SPACER, PLATE, (SEXTANT)
	2					37	2021266-001	SPACER, PLATE, (SEXTANT)
	4					36	1008488-001	SCREW, SLOTTED, SPECIAL SEXTANT COVER
	1					35	1008487-005	SCREW, CAP, SLOTTED HEAD
	4					34	1008487-004	SCREW, CAP, SLOTTED HEAD
7	7					33	1008493	INSULATOR
4	4					32	1008488-000	SCREW SLOTTED. SPECIAL SEXTANT COVER
4	4					31	1008487-003	SCREW, CAP SLOTTED HEAD
1	1					30	1008487-002	SCREW, CAP SLOTTED HEAD
4	4					29	1008487-001	SCREW, CAP SLOTTED HEAD
13	11					28	1008486	WASHER, FLAT
≠	1					27	1021378-011	CROWN HALF AND PLUG ASSY SEXTANT (MATCHED ASSY)
≠	1					26	1021377-011	CROWN HALF AND PLUG ASSY TELESCOPE (MATCHED ASSY)
~~AR~~		AR	AR			25	1008903	ADHESIVE, EPOXY
		1	1			24	1021352-011	DUST COVER ASSY (SCT)
~~2~~		2	2			23	1021358-011	RETAINER, DUST COVER
		1	1			22	1021362-011	DUST COVER ASSY (SXT)
~~2~~		2	2			21	1021358-021	RETAINER, DUST COVER
		AR	AR	AR		20	1008906	SILICONE RUBBER
		AR	AR	AR		19	1008913	CURING AGENT
		AR	AR	AR		18	1008912	FILLER
		AR	AR	AR		17	1008911	EPOXY RESIN
		AR	AR	AR		16	1012543-001	LIGHT DIFFUSING COATING KIT
			1	1		15	1021373-001	ASTROSEXTANT PASSIVE THERMAL PROTECTIVE ASSY (SERIES 50)
		AR	AR	AR		14	1008910	PAINT, GRAY
		3				13	1021322-002	PLUG
		2				12	1021339-003	SCREW, CAP, SOC. HD.
		1				11	1021339-002	SCREW, CAP, SOC. HD.
		4				10	1021341-002	WASHER
		4				9	1021339-001	SCREW CAP, SOC. HD.
		7				8	1021341-001	WASHER
		4				7	1021322-001	PLUG
		7				6	1021324	INSULATOR
		4				5	1021326	SCREW, SLOTTED, SPL, SEXTANT COVER
		1				4	1021338	FILLET, PROTECTOR, TELESCOPE COVER
		2				3	1021320-000	CROWN, HALF, UPPER SEXTANT COVER
		1				2	1021329	CROWN, HALF, LWR, SEXTANT COVER (INSEP ASSY
		1				1	1021337	CROWN, HALF, LWR, TELESCOPE COVER (INSEP ASSY
QUANTITY REQUIRED								

APPLICABLE DASH NO.	NEXT ASSY	USED ON
	1014999	
	2014999	
	2015000	

APPLICATION

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
APPROVAL

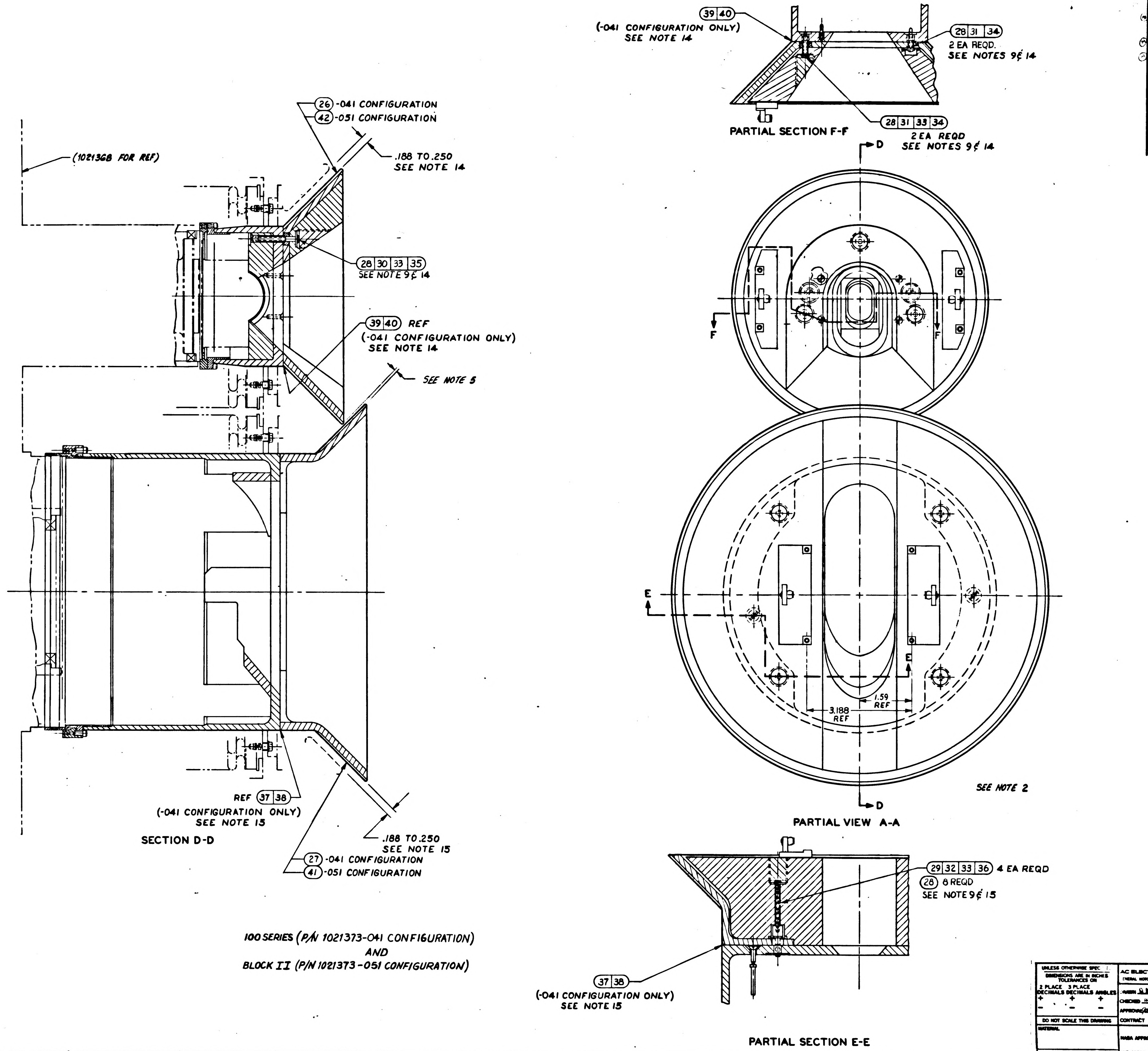
AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS.
DRAWN DATE 3 OCT 66
CHECKED
APPROVAL
CONTRACT
NASA APPROVAL
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

ASTROSEXTANT PASSIVE
THERMAL PROTECTIVE
SYSTEM ASSEMBLY

SIZE J2
CODE IDENT NO. 99974
1021373
SCALE FULL
SHEET 1 OF 2

21373 F SH 1 OF 2



9
8
7
6
5
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3
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1
H
G
F
E
D
C
B
A
(1021368 FOR REF)
(26) -041 CONFIGURATION
(42) -051 CONFIGURATION
.188 TO .250
SEE NOTE 14
28 30 33 35
SEE NOTE 9 & 14
39 40 REF
(-041 CONFIGURATION ONLY)
SEE NOTE 14
SEE NOTE 5
REF 37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15
SECTION D-D
.188 TO .250
SEE NOTE 15
(27) -041 CONFIGURATION
(41) -051 CONFIGURATION
39 40
(-041 CONFIGURATION ONLY)
SEE NOTE 14
28 31 34
2 EA REQD.
SEE NOTES 9 & 14
28 31 33 34
2 EA REQD
SEE NOTES 9 & 14
PARTIAL SECTION F-F
D
F
F
E
E
1.59
REF
3.188
REF
D
SEE NOTE 2
PARTIAL VIEW A-A
29 32 33 36 4 EA REQD
(28) 8 REQD
SEE NOTE 9 & 15
37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15
PARTIAL SECTION E-E

100 SERIES (P/N 1021373-041 CONFIGURATION)
AND
BLOCK II (P/N 1021373-051 CONFIGURATION)

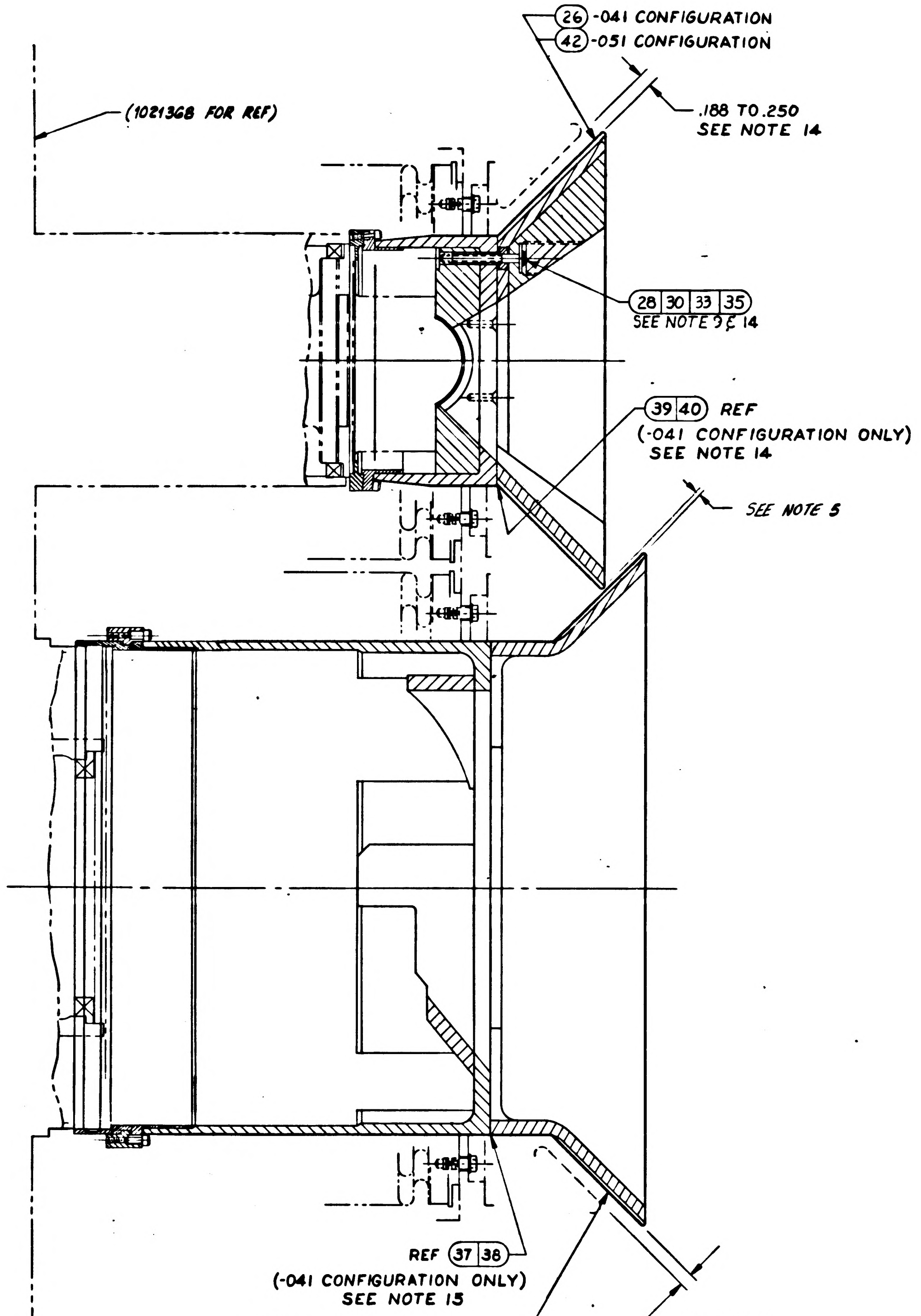
REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO
A		REVISED PER E[illegible] 216221	
B		INITIAL RELEASE CLASS A PER TDRR	
C		REVISED PER TDRR 33015	
D		REVISED PER TDRR 33016	
E		REVISED PER TDRR 33017	
F		REVISED PER TDRR 33581	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS + − 3 PLACE DECIMALS + − ANGLES + −	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DRAWN [illegible] DATE 3 Oct 62		ASTROSEXTANT PAS THERMAL PROTEC SYSTEM ASSEMBL
	CHECKED W [illegible] 25 Oct 62		
	APPROVAL [illegible] 25 Oct 62		
DO NOT SCALE THIS DRAWING	CONTRACT		
MATERIAL	NASA APPROVAL	SIZE E	CODE IDENT NO. 99974 · 102137
APPROVAL	MIT APPROVAL	SCALE FULL	SHEET

1021373

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		REVISED PER ECN 216221		2 NOV 66	JRK EG
B		INITIAL RELEASE CLASS A PER TDRR 32 202		2/11/66	DG
C		REVISED PER TDRR 33015		FEB	JWE
D		REVISED PER TDRR 33016		7 MAR 67	D.a.d.
E		REVISED PER TDRR 33017		8 MAR 67	
F		REVISED PER TDRR 33981		2 AUG 67	ES

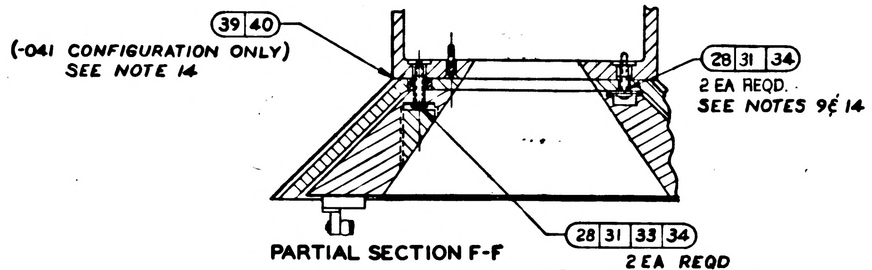


(1021368 FOR REF)
(26) -041 CONFIGURATION
(42) -051 CONFIGURATION
.188 TO .250
SEE NOTE 14
28 30 33 35
SEE NOTE 9 & 14
39 40 REF
(-041 CONFIGURATION ONLY)
SEE NOTE 14
SEE NOTE 5
REF 37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15

SECTION D-D

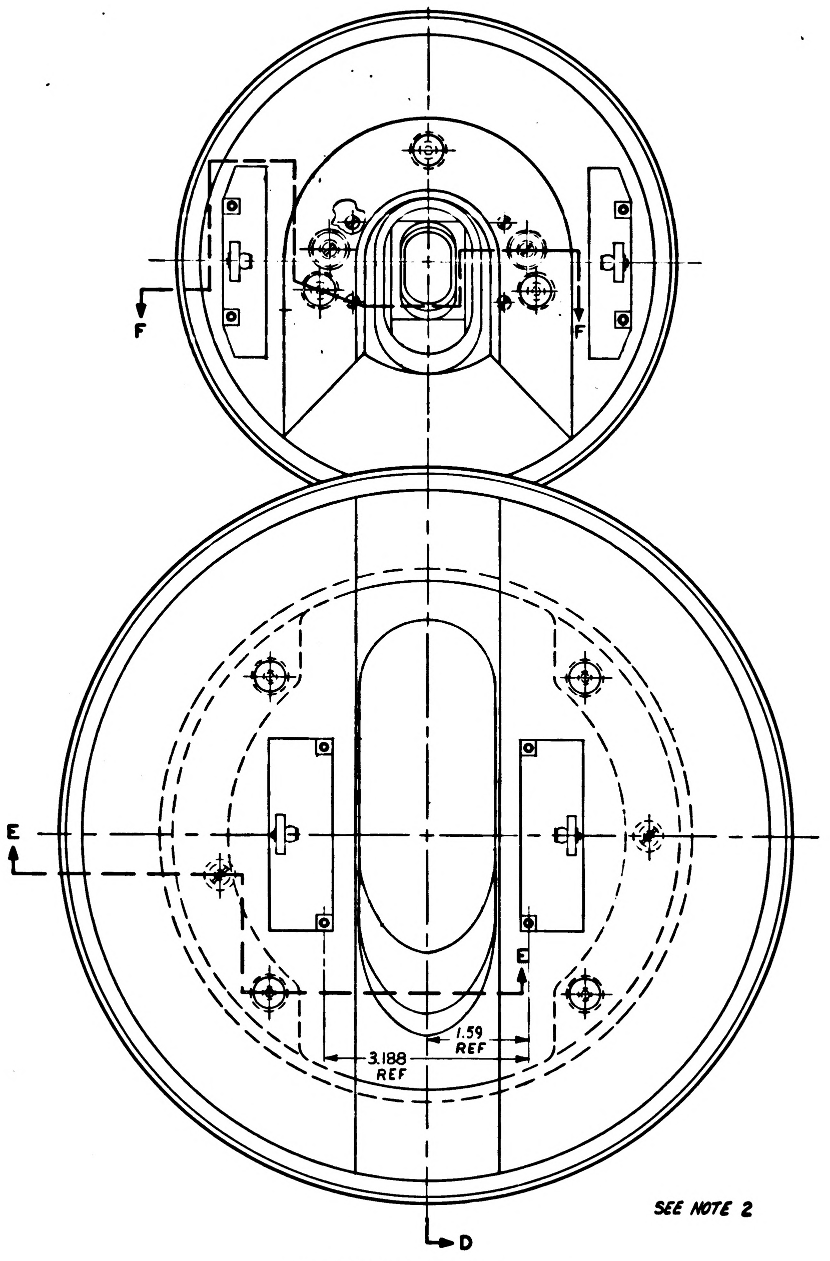
.188 TO .250
SEE NOTE 15

(27) -041 CONFIGURATION
(41) -051 CONFIGURATION



39 40
(-041 CONFIGURATION ONLY)
SEE NOTE 14
28 31 34
2 EA REQD.
SEE NOTES 9 & 14
28 31 33 34
2 EA REQD
SEE NOTES 9 & 14

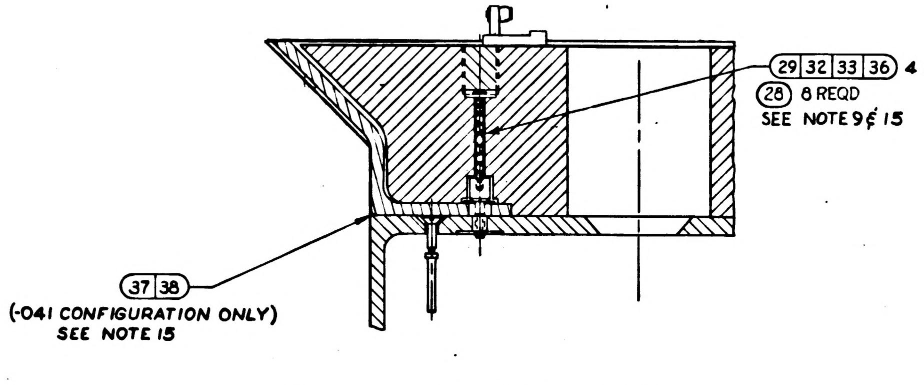
PARTIAL SECTION F-F



D
F
F
E
E
1.59
REF
3.188
REF
D

SEE NOTE 2

PARTIAL VIEW A-A



29 32 33 36 4 EA REQD
28 8 REQD
SEE NOTE 9 & 15
37 38
(-041 CONFIGURATION ONLY)
SEE NOTE 15

PARTIAL SECTION E-E

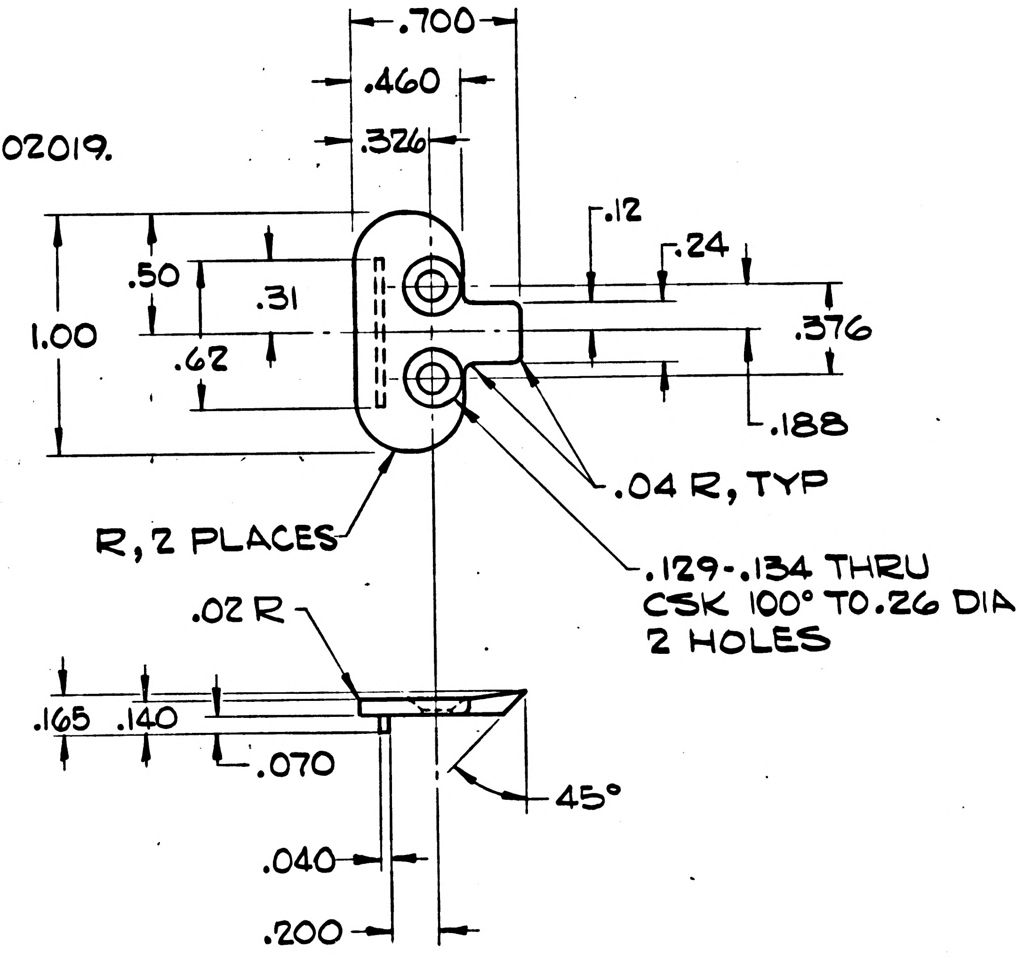
100 SERIES (P/N 1021373-041 CONFIGURATION)
AND
BLOCK II (P/N 1021373-051 CONFIGURATION)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ±	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
DO NOT SCALE THIS DRAWING	DRAWN D. Berg 3 Oct. 66 DATE CHECKED W. Light 26 Oct 66 APPROVED CONTRACT	ASTROSEXTANT PASSIVE THERMAL PROTECTIVE SYSTEM ASSEMBLY
MATERIAL	NASA APPROVAL	SIZE E CODE IDENT NO. 99974 1021373
APPROVAL	MIT APPROVAL	SCALE FULL SHEET 2 of 2

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 31792		11/3/66	10/20/66

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-S-763, CLASS 416, COND A, CF STAINLESS STEEL
3. FINISH: PASSIVATE PER MIL-F-14072 (SIG C) FINISH E-300.
4. UNLESS OTHERWISE SPECIFIED:
   A. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
5. MUST BE FREE FROM BURRS.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.


.700
.460
.326
.12
.24
.50
.31
1.00
.62
.376
.188
.04 R, TYP
R, 2 PLACES
.129-.134 THRU
CSK 100° TO .26 DIA
2 HOLES
.02 R
.165
.140
.070
45°
.040
.200

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 0°30'	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DO NOT SCALE THIS DRAWING	DRAWN Lockmann DATE 4 OCT 66 CHECKED Ed Foster 6 OCT 66 APPROVAL R.E. Tietz 6 OCT 66 CONTRACT NAS 9-497	TAB, CATCH	
MATERIAL SEE NOTE 2	NASA APPROVAL A C	SIZE C	CODE IDENT NO. 99974
APPROVAL 6 OCT 66	CCB APPROVAL 11/3/66	SCALE 2/1	1021374 SHEET 1 OF 1

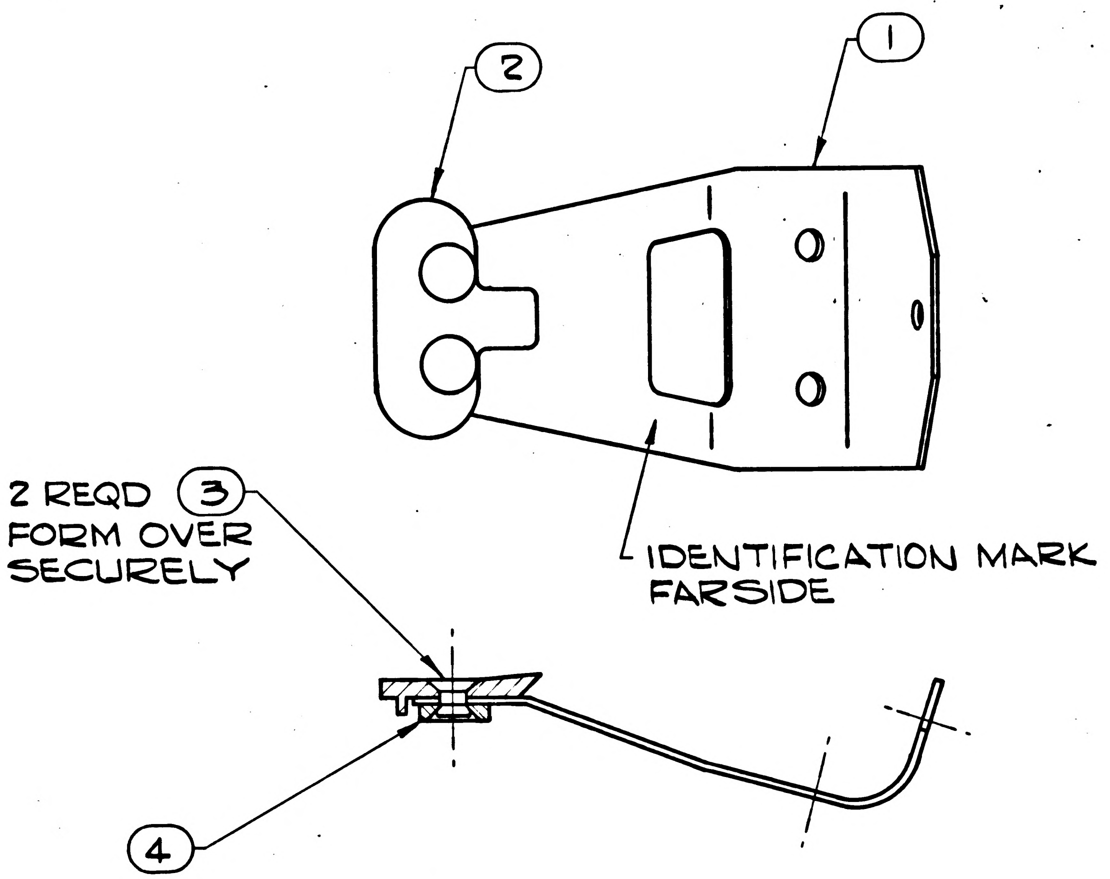
1021375	
NEXT ASSY	USED ON
APPLICATION	

MIL-1052C P

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 31792		11/3/66	10/20/66

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. APPLY CHEMICAL FILM PER MIL-C-5541 TO RIVETS AFTER ASSEMBLY.
3. IDENTIFY USING DRAWING NUMBER PER ND1002019.



2 REQD ③ FORM OVER SECURELY

IDENTIFICATION MARK FARSIDE

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
4	1	1021270	PLATE, MOUNTING, TAB
3	2	MS20426AD4-3	(1897063-203) RIVET, F.H.
2	1	1021374	TAB, CATCH
1	1	1021260	SPRING, CATCH

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS + — − | 3 PLACE DECIMALS + — − | ANGLES + — −
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL 6 OCT 66

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN 4 OCT 66 DATE
CHECKED Ed Foster 6 OCT 66
APPROVAL R E Lietz 6 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL A C
CCB APPROVAL 11/3/66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

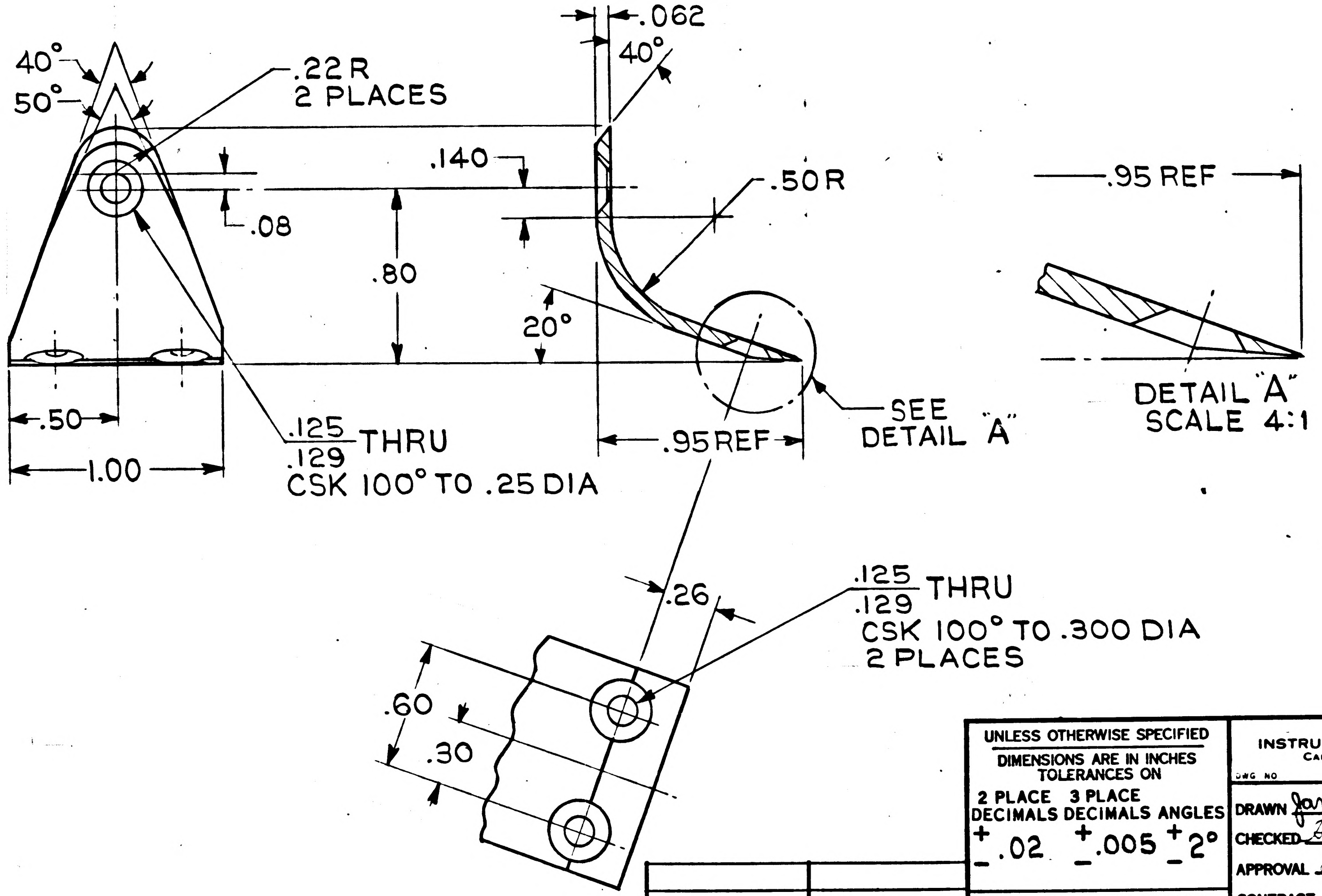
CATCH, CLAMPING
(INSEPARABLE ASSEMBLY)

SIZE C | CODE IDENT NO. 99974 | 1021375
SCALE 2/1 | SHEET 1 OF 1

ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 31792.		11/3/66	10/20/66

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: QQ-A-250/11, TEMPER T6 (AL ALY 6061-T6).
3. MUST BE FREE FROM BURRS AND SHARP CORNERS.
4. IDENTIFY USING DRAWING NUMBER PER ND 1002019.


40°
50°
.22 R
2 PLACES
.140
.08
.80
.062
40°
.50 R
20°
.50
1.00
.125
.129 THRU
CSK 100° TO .25 DIA
.95 REF
SEE
DETAIL "A"
.95 REF
DETAIL "A"
SCALE 4:1
.26
.125
.129 THRU
CSK 100° TO .300 DIA
2 PLACES
.60
.30

NEXT ASSY	USED ON
1021314	1021255-011

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES
±.02	±.005	±2°

DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
APPROVAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Janowiak DATE 6 OCT 66
CHECKED Hogue 7 OCT 66
APPROVAL R E Lietz 7 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
CCA APPROVAL 11/3/66

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

STRIKE, CATCH

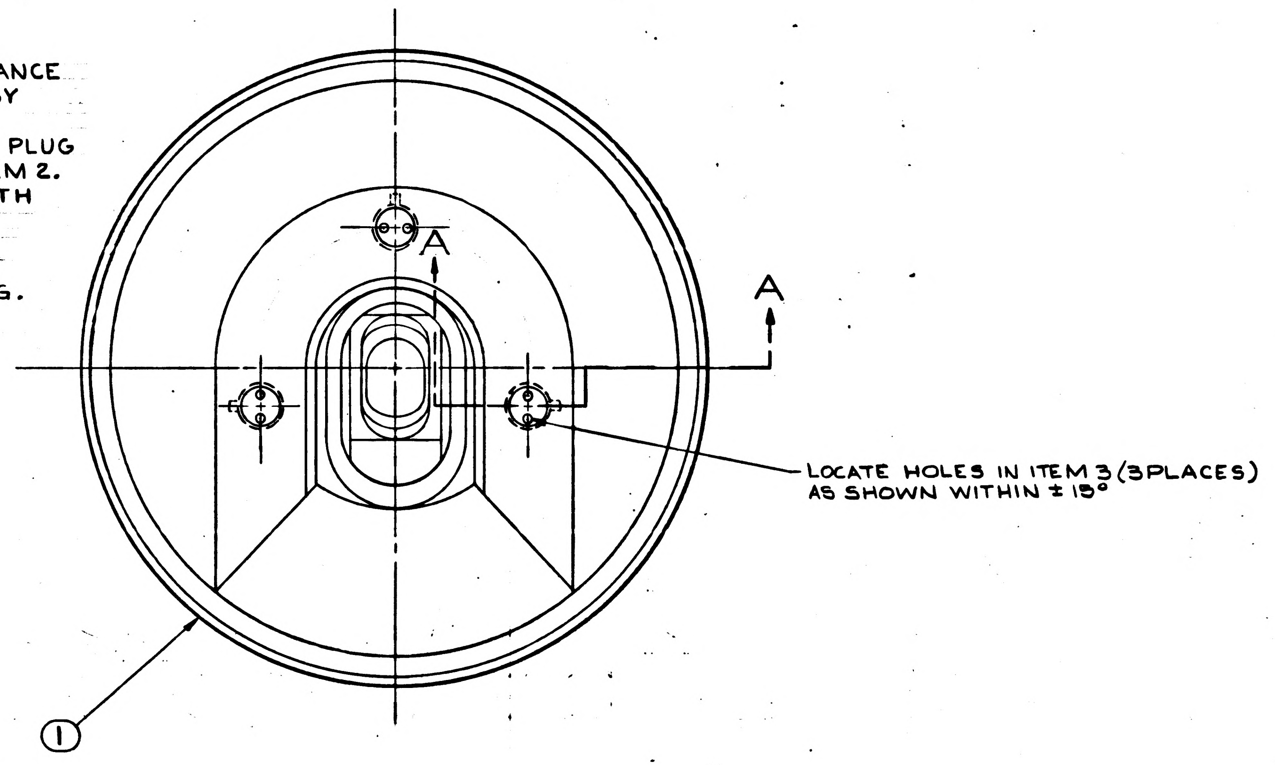
SIZE C
CODE IDENT NO. 80230
1021376
SCALE 2:1
SHEET 1 OF 1

MIL-1052C P

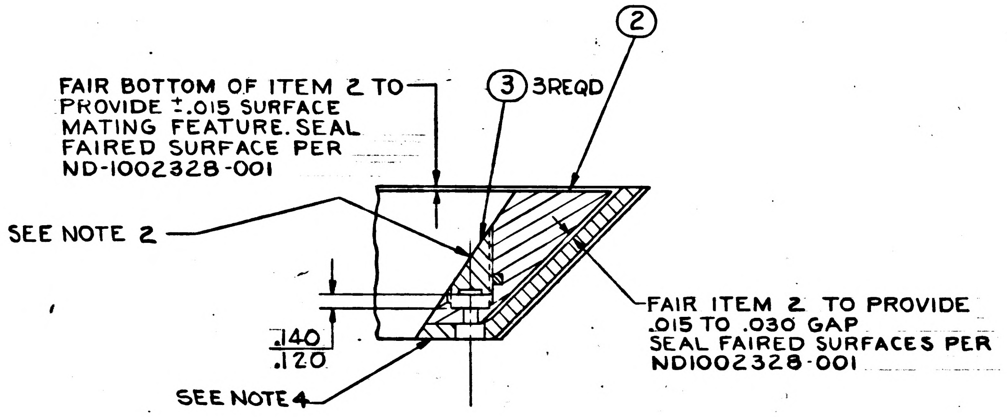
REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	10/24/66

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 2. SEAL ITEM 3 IN ACCORDANCE WITH ND1002328-001 FOLLOWED BY PAINTING IN ACCORDANCE WITH ND1002277 USING ITEM 4.
3. VENDOR ITEM: SEE SOURCE CONTROL DWG.
4. IDENTIFY USING PART NUMBER PER MIL-STD-130.



A
A
LOCATE HOLES IN ITEM 3 (3 PLACES) AS SHOWN WITHIN ± 15°
①



FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
③ 3REQD
②
SEE NOTE 2
FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACES PER ND1002328-001
.140
.120
SEE NOTE 4

PARTIAL SECTION A-A

SEE NOTE 3			AR	4	1012543-001	COATING KIT LIGHT DIFFUSING	
			3	3	1021322-002	PLUG	
			1	2	1008496	FILLET PROTECTOR	
			1	1	1008497	CROWN HALF, LOWER	
			-011	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
QUANTITY REQUIRED				LIST OF PARTS AND MATERIALS			

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

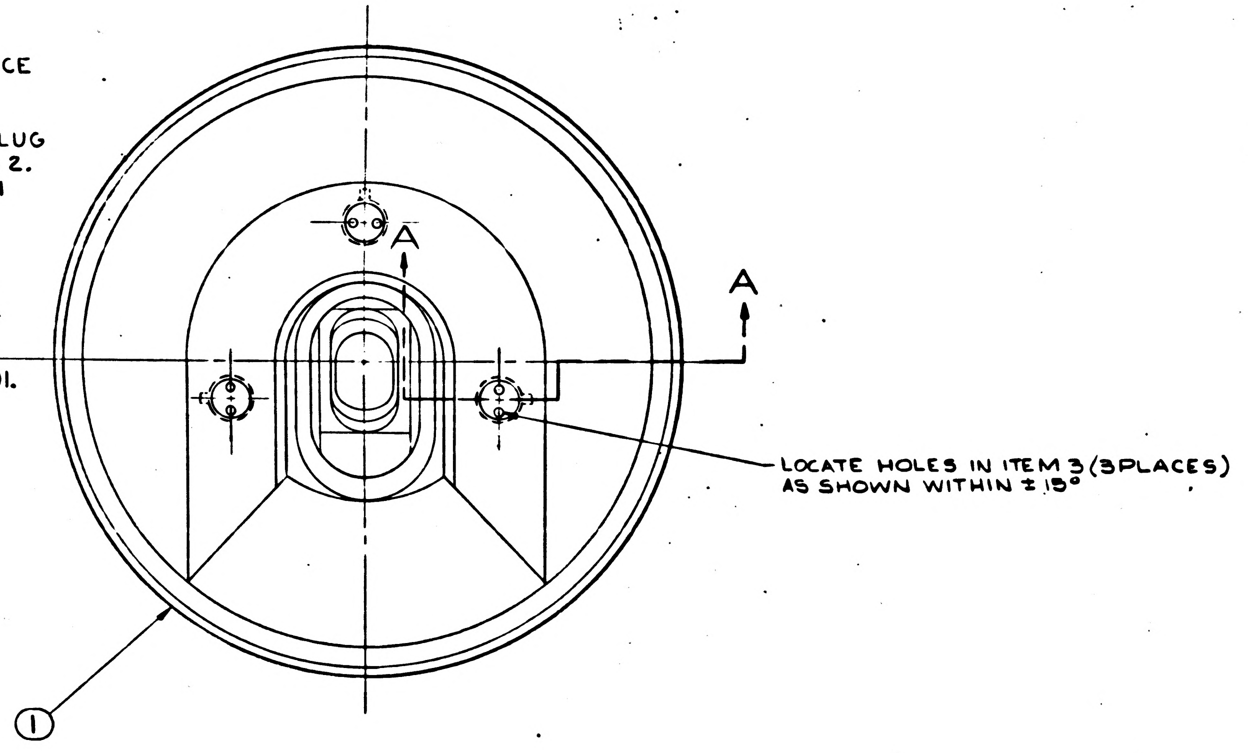
NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± — 3 PLACE DECIMALS ± — ANGLES ± —	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN LES. HALL DATE 11 OCT 66 CHECKED JaKima 14 OCT 66 APPROVAL LCSmith 17 OCT 66 CONTRACT NAS 9-497	CROWN HALF AND PLUG ASSEMBLY, TELESCOPE (MATCHED ASSEMBLY)
		MATERIAL —	NASA APPROVAL	SIZE D — CODE IDENT NO. 99974 — 1021377
		APPROVAL	AC APPROVAL	SCALE 1/1 — SHEET 1 OF 1

REV LTR B	1021377

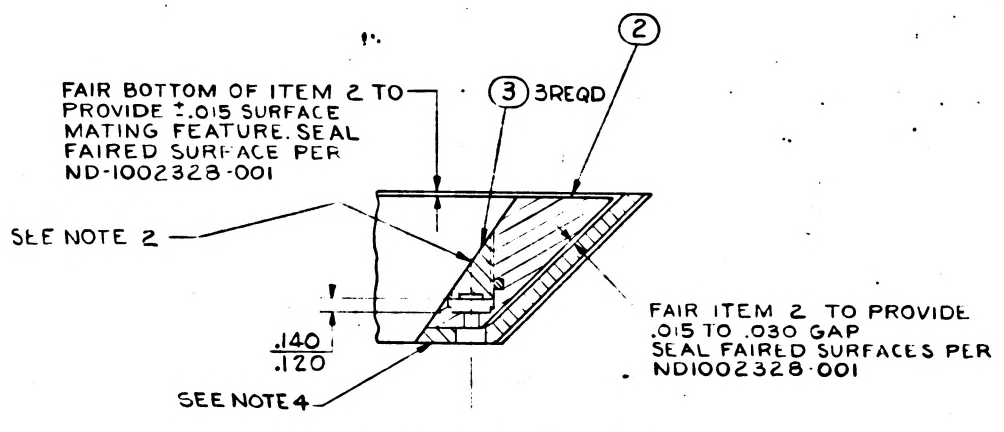
REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	
B'		REVISED PER TDRR 33020		9 MAR 67	

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 2. SEAL ITEM 3 IN ACCORDANCE WITH ND1002328-001 FOLLOWED BY PAINTING IN ACCORDANCE WITH ND1002277 USING ITEM 4.
3. VENDOR ITEM: SEE SOURCE CONTROL DWG.
4. IDENTIFY USING PART NUMBER PER MIL-STD-130.
5. BOND ITEM 5 TO ITEM 2 USING ITEM 6, P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.



LOCATE HOLES IN ITEM 3 (3PLACES) AS SHOWN WITHIN ± 15°



FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001

SEE NOTE 2

FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACES PER ND1002328-001

SEE NOTE 4

PARTIAL SECTION A-A

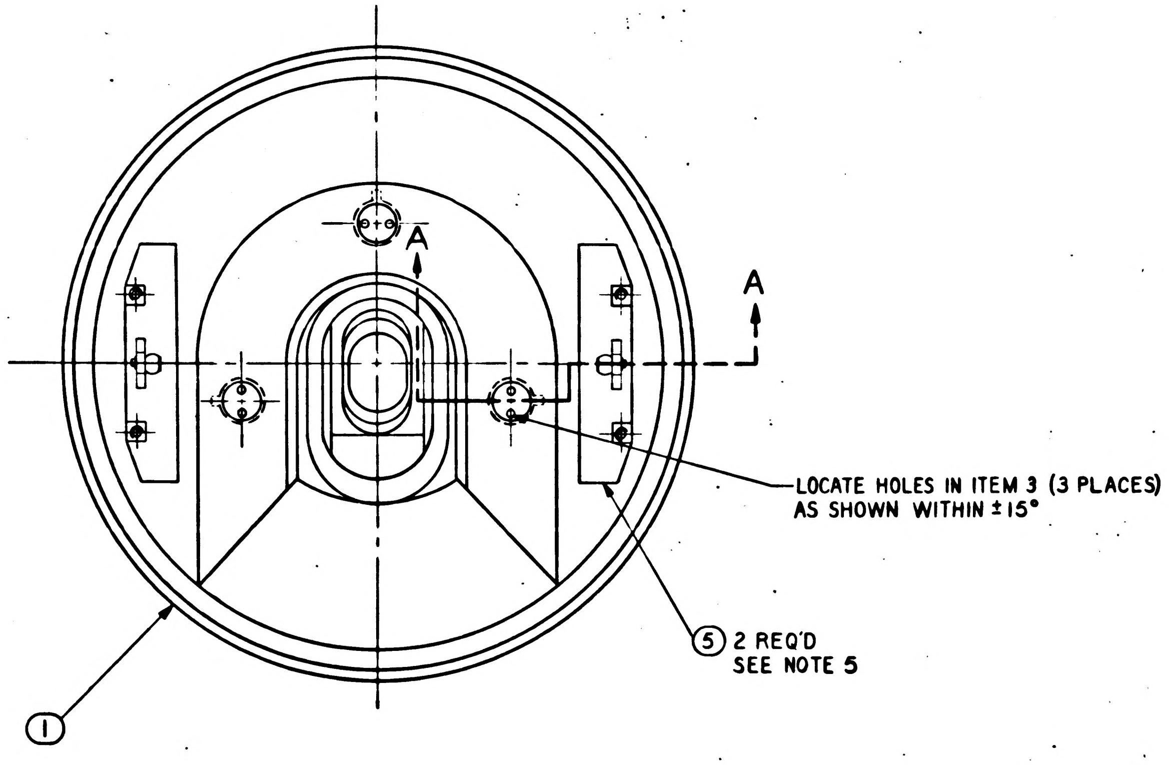
		AR		6	1008903	ADHESIVE, EPOXY	
		2		5	1021358-011	RETAINER ASSY, DUST COVER	
SEE NOTE 3		AR	AR	4	1012543-001	COATING KIT LIGHT DIFFUSING	
		3	3	3	1021322-002	PLUG	
		1	1	2	1008496	FILLET PROTECTOR	
		1	1	1	1008497	CROWN HALF, LOWER	
		021	011	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
QUANTITY REQUIRED				LIST OF PARTS AND MATERIALS			

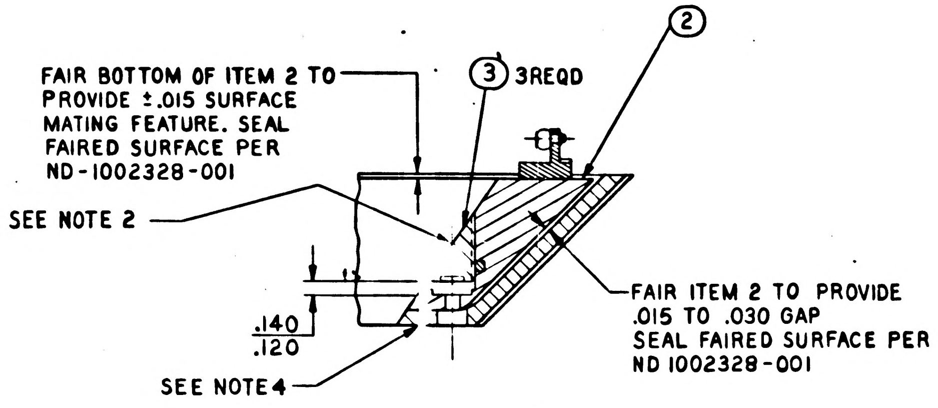
THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±—	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN LES HALL DATE 11 OCT 66 CHECKED J. Akins 14 OCT 66 APPROVAL 17 OCT 66 CONTRACT NAS 9-497	CROWN HALF AND PLUG ASSEMBLY, TELESCOPE (MATCHED ASSEMBLY)
		MATERIAL —	NASA APPROVAL	SIZE D CODE IDENT NO. 99974 1021377
		APPROVAL	APPROVAL	SCALE 1/1 SHEET 1 OF 2

B 1021377

REVISIONS					
SYM	ZONE	DESCRIPTION		DATE	APPD
B		THIS SHT ADDED PER TDRR 33020	CHG NO	9 MAR 67	


A
A
LOCATE HOLES IN ITEM 3 (3 PLACES) AS SHOWN WITHIN ±15°
⑤ 2 REQ'D SEE NOTE 5
①


②
FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
③ 3REQD
SEE NOTE 2
FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACE PER ND 1002328-001
.140
.120
SEE NOTE 4

PARTIAL SECTION A-A

THIS SHEET ADDED

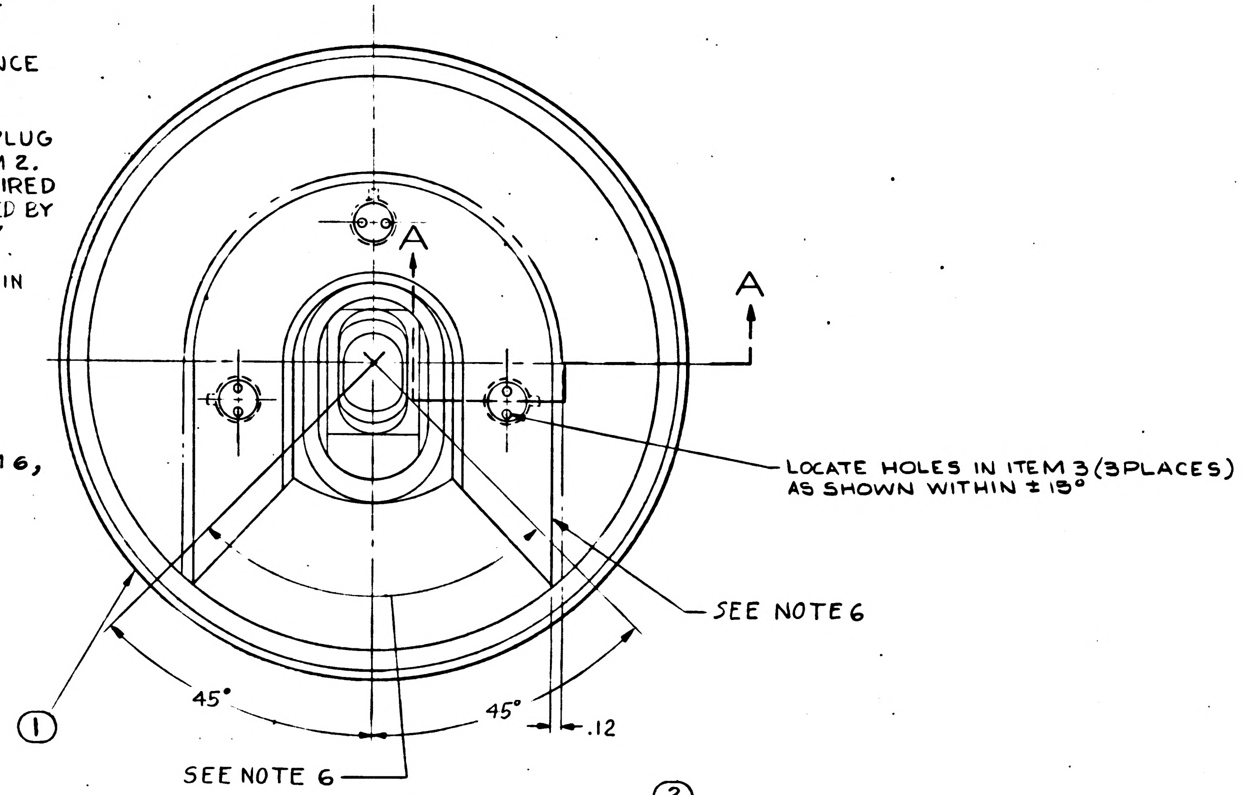
NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±— DO NOT SCALE THIS DRAWING	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS DRAWN Les Hall DATE 11 OCT 66 CHECKED J. Lima 14 OCT 66 APPROVAL L.C. Smith 17 OCT 66 CONTRACT NAS9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS CROWN HALF AND PLUG ASSEMBLY, TELESCOPE (MATCHED ASSEMBLY)
APPLICATION		MATERIAL ——	A. Metzger NASA APPROVAL E.N. Austin AC APPROVAL	SIZE D CODE IDENT NO 99974 1021377
		APPROVAL		SCALE 1/1 SHEET 2 OF 2

REV LTR C | 1021377

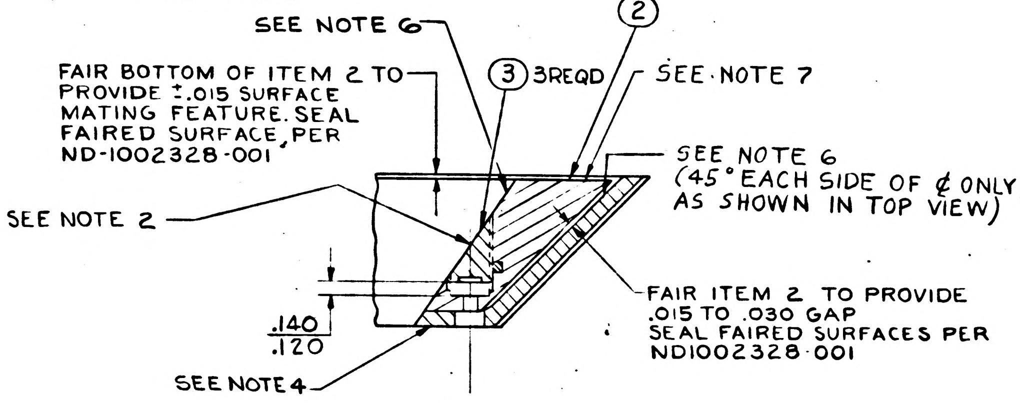
REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 32202		11/1/66	10/26/66
B		REVISED PER TDRR 33020		9 MAR 67	
C		REVISED PER TDRR 33181		16 MAR 67	RCB

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 2. REMOVE PLUGS, ITEM 3, AND SEAL FAIRED SURFACE PER ND 1002328-001 FOLLOWED BY PAINTING OF FAIRED SURFACE PER ND 1002277 USING ITEM 4.
   CAUTION: EACH PLUG, ITEM 3 MUST BE REPLACED IN SAME HOLE AS DURING FAIRING OPERATION TO MAINTAIN MATCHED ASSEMBLY.
3. VENDOR ITEM: SEE SOURCE CONTROL DWG.
4. IDENTIFY USING PART NUMBER PER MIL-STD-130.
5. BOND ITEM 5 TO ITEM 2 USING ITEM 6, P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.
6. APPLY BLACK COATING PER ND 1002277 USING ITEM ④ ON SURFACE INDICATED.
7. APPLY GRAY COATING TO SPECIFIED SURFACE PER ND 1002328-002 USING ITEM ⑦.



A
A
LOCATE HOLES IN ITEM 3 (3 PLACES) AS SHOWN WITHIN ± 15°
SEE NOTE 6
45°
45°
.12
①
SEE NOTE 6



SEE NOTE 6
②
FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE, PER ND-1002328-001
③ 3 REQD
SEE NOTE 7
SEE NOTE 6 (45° EACH SIDE OF ℄ ONLY, AS SHOWN IN TOP VIEW)
SEE NOTE 2
FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACES PER ND1002328-001
.140
.120
SEE NOTE 4

PARTIAL SECTION A-A
"011 CONFIGURATION ONLY"

	021	011	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
	AR	AR	7	1008910	ENAMEL-EPOXY-AMINE	
	AR		6	1008903	ADHESIVE, EPOXY	
	2		5	1021358-011	RETAINER ASSY, DUST COVER	
SEE NOTE 3	AR	AR	4	1012543-001	COATING KIT LIGHT DIFFUSING	
	3	3	3	1021322-002	PLUG	
	1	1	2	1008496	FILLET PROTECTOR	
	1	1	1	1008497	CROWN HALF, LOWER	

QUANTITY REQUIRED | LIST OF PARTS AND MATERIALS

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .02
3 PLACE DECIMALS ± .005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP MILWAUKEE WIS
DRAWN LES HALL DATE 11 OCT 66
CHECKED Jakins 14 OCT 66
APPROVAL LC Smith 17 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
AC APPROVAL

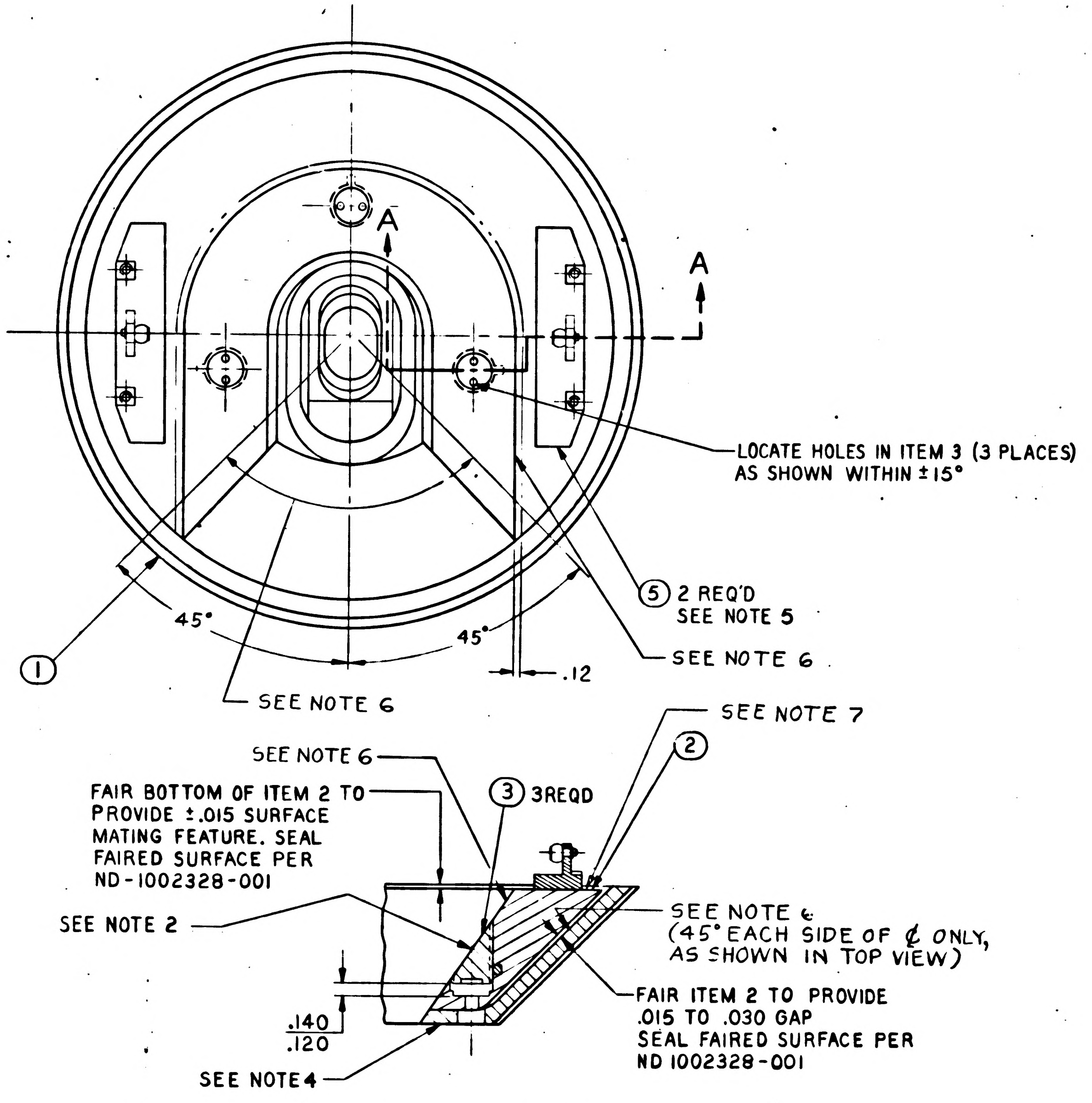
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CROWN HALF AND PLUG
ASSEMBLY, TELESCOPE
(MATCHED ASSEMBLY)

SIZE D
CODE IDENT NO. 99974
1021377
SCALE 1/1
SHEET 1 OF 2

REV LTR C 1021377

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
B		THIS SHT ADDED PER TDRR 33020		7 MAR 67	
C		REVISED PER TDRR 33181		16 MAR 67	RCB


A
A
LOCATE HOLES IN ITEM 3 (3 PLACES) AS SHOWN WITHIN ±15°
⑤ 2 REQ'D SEE NOTE 5
SEE NOTE 6
45°
45°
.12
①
SEE NOTE 6
SEE NOTE 7
②
SEE NOTE 6
③ 3REQD
FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
SEE NOTE 2
SEE NOTE 6 (45° EACH SIDE OF ℄ ONLY, AS SHOWN IN TOP VIEW)
FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACE PER ND 1002328-001
.140
.120
SEE NOTE 4

PARTIAL SECTION A-A
"021 CONFIGURATION ONLY"

THIS SHEET ADDED

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±—	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN LES HALL DATE 11 OCT 66 CHECKED J. LIMA 14 OCT 66 APPROVAL L.C. SMITH 17 OCT 66 CONTRACT NAS9-497
		MATERIAL —	A. METZGER NASA APPROVAL AC E.N. AUSTIN APPROVAL
		APPROVAL	

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

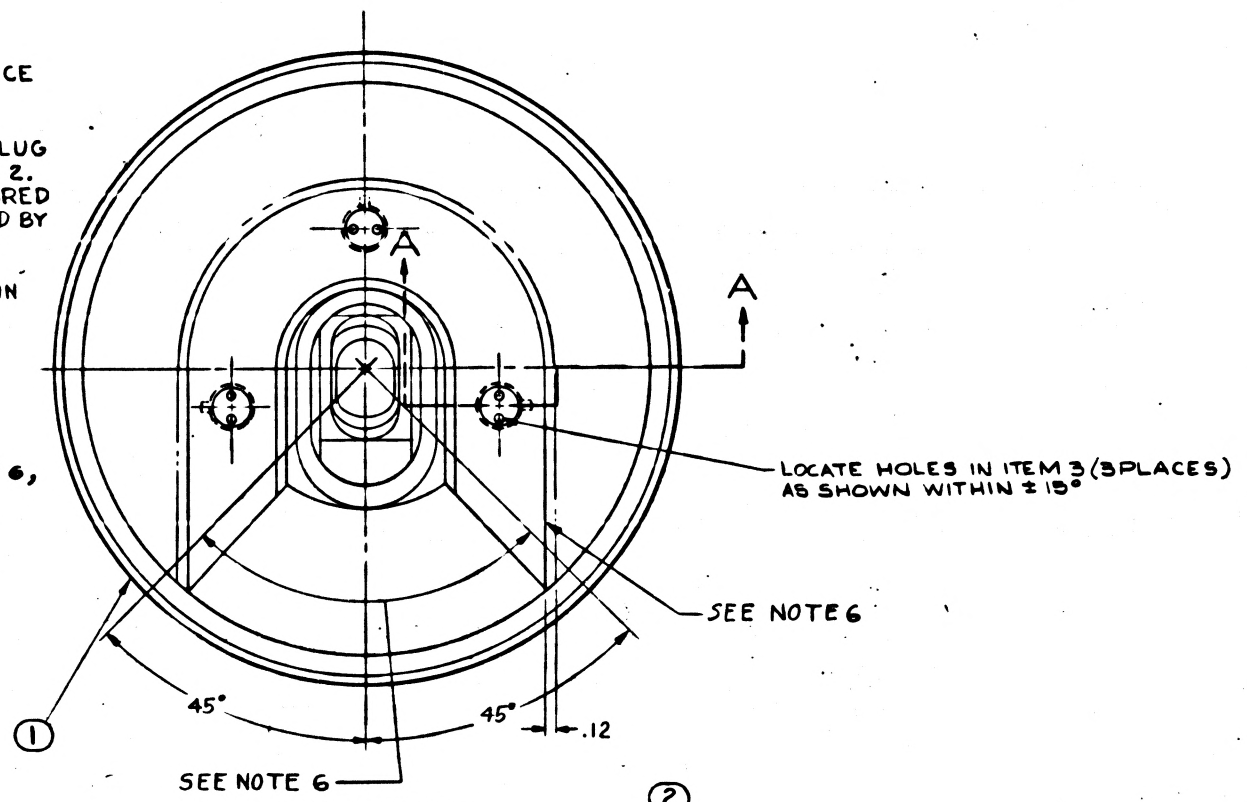
CROWN HALF AND PLUG ASSEMBLY, TELESCOPE (MATCHED ASSEMBLY)

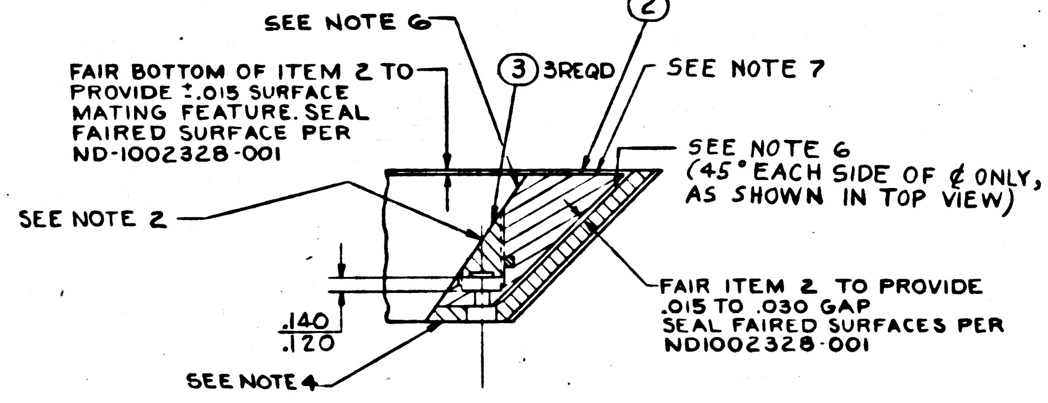
SIZE D
CODE IDENT NO. 99974
1021377
SCALE 1/1
SHEET 2 OF 2

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 32202		1/1/66	
B		REVISED PER TDRR 33020		9 MAR 67	CJS TH
C		REVISED PER TDRR 33181		16 MAR 67	RCB
D		REVISION STATUS CHANGED		31 MAR 67	PV GX
E		REVISION STATUS CHANGED		27 SEP 68	F.N.

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 2. REMOVE PLUGS, ITEM 3, AND SEAL FAIRED SURFACE PER ND 1002328-001 FOLLOWED BY PAINTING OF FAIRED SURFACE PER ND 1002277 USING ITEM 4.
   CAUTION: EACH PLUG, ITEM 3 MUST BE REPLACED IN SAME HOLE AS DURING FAIRING OPERATION TO MAINTAIN MATCHED ASSEMBLY.
3. VENDOR ITEM: SEE SOURCE CONTROL DWG.
4. IDENTIFY USING PART NUMBER PER MIL-STD-130.
5. BOND ITEM 5 TO ITEM 2 USING ITEM 6, P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.
6. APPLY BLACK COATING PER ND 1002277 USING ITEM ④ ON SURFACE INDICATED.
7. APPLY GRAY COATING TO SPECIFIED SURFACE PER ND 1002328-002 USING ITEM ⑦.


A
A
LOCATE HOLES IN ITEM 3 (3 PLACES) AS SHOWN WITHIN ± 15°
SEE NOTE 6
45°
45°
.12
①
SEE NOTE 6


SEE NOTE 6
②
③ 3 REQD
SEE NOTE 7
FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
SEE NOTE 6 (45° EACH SIDE OF ℄ ONLY, AS SHOWN IN TOP VIEW)
SEE NOTE 2
FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACES PER ND1002328-001
.140
.120
SEE NOTE 4

PARTIAL SECTION A-A
"011 CONFIGURATION ONLY"

			021	011	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
			AR	AR	7	1008910	ENAMEL-EPOXY-AMINE	
			AR		6	1008903	ADHESIVE, EPOXY	
			2		5	1021358-011	RETAINER ASSY, DUST COVER	
SEE NOTE 3			AR	AR	4	1012543-001	COATING KIT LIGHT DIFFUSING	
			3	3	3	1021322-002	PLUG	
			1	1	2	1008496	FILLET PROTECTOR	
			1	1	1	1008497	CROWN HALF, LOWER	

QUANTITY REQUIRED — LIST OF PARTS AND MATERIALS

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±.02
3 PLACE DECIMALS ±.005
ANGLES ±—
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

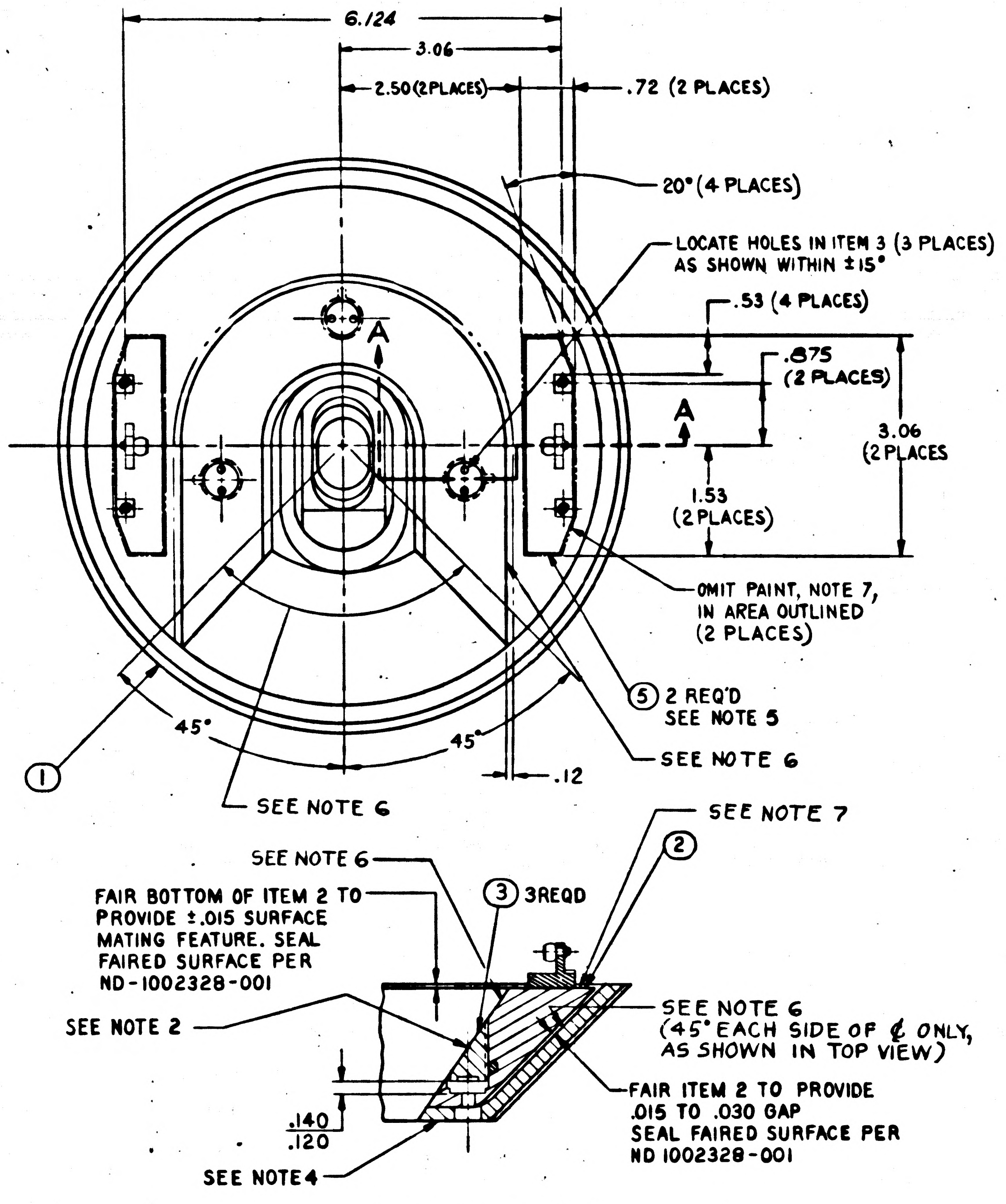
AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN LES HALL DATE 11 OCT 66
CHECKED 14 OCT 66
APPROVAL 17 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
AC APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

CROWN HALF AND PLUG
ASSEMBLY, TELESCOPE
(MATCHED ASSEMBLY)

SIZE D
CODE IDENT NO. 99974
1021377
SCALE 1/1
SHEET 1 OF 2

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
B		THIS SHT ADDED PER TDRR 33020		7 MAR 67	
C		REVISED PER TDRR 33181		16 MAR 67	RCB
D		REVISED PER TDRR 33223		3 MAR 67	RY
E		REVISED PER TDRR 36854		27 SEP 68	A.N.


6.124
3.06
2.50 (2 PLACES)
.72 (2 PLACES)
20° (4 PLACES)
LOCATE HOLES IN ITEM 3 (3 PLACES) AS SHOWN WITHIN ±15°
.53 (4 PLACES)
.875 (2 PLACES)
A
A
3.06 (2 PLACES)
1.53 (2 PLACES)
OMIT PAINT, NOTE 7, IN AREA OUTLINED (2 PLACES)
⑤ 2 REQ'D SEE NOTE 5
SEE NOTE 6
45°
45°
.12
①
SEE NOTE 6
SEE NOTE 7
②
SEE NOTE 6
③ 3 REQD
FAIR BOTTOM OF ITEM 2 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
SEE NOTE 2
SEE NOTE 6 (45° EACH SIDE OF ℄ ONLY, AS SHOWN IN TOP VIEW)
FAIR ITEM 2 TO PROVIDE .015 TO .030 GAP SEAL FAIRED SURFACE PER ND 1002328-001
.140
.120
SEE NOTE 4

PARTIAL SECTION A-A
"021 CONFIGURATION ONLY"

THIS SHEET ADDED

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.005 ANGLES ±— DO NOT SCALE THIS DRAWING	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS DRAWN Les Hall DATE 11 OCT 66 CHECKED J. Lima 14 OCT 66 APPROVAL L.C. Smith 17 OCT 66 CONTRACT NAS9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS CROWN HALF AND PLUG ASSEMBLY, TELESCOPE (MATCHED ASSEMBLY)
APPLICATION		MATERIAL — APPROVAL	A. METZGER NASA APPROVAL AC EN AUSTIN APPROVAL	SIZE D CODE IDENT NO. 99974 1021377 SCALE 1/1 SHEET 2 OF 2

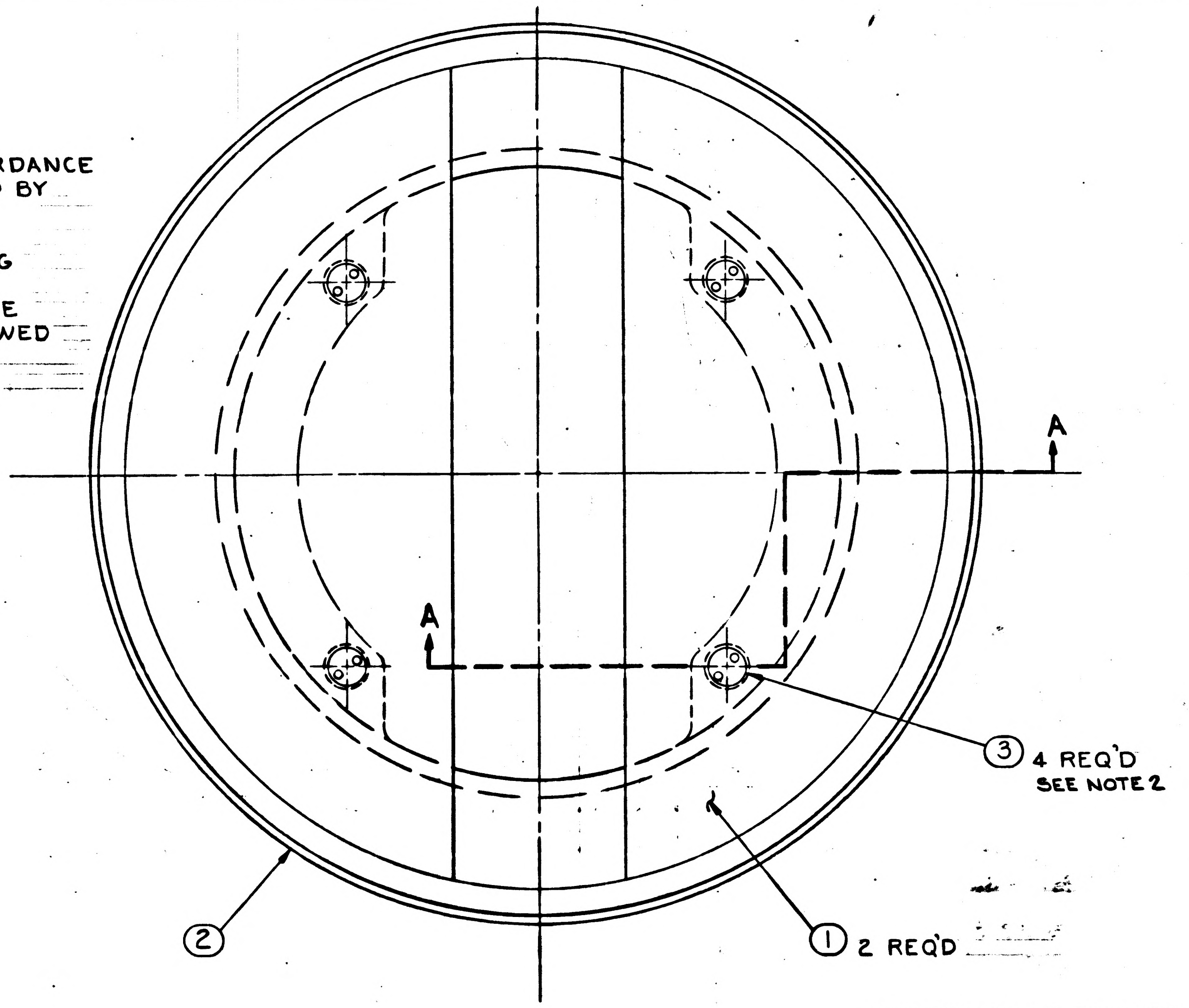
REV		
A	1021378	2

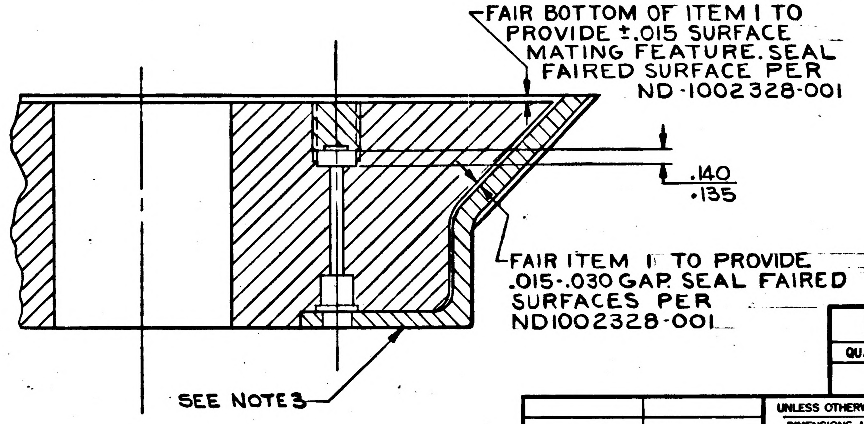
REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
A		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 1. SEAL ITEM 3 IN ACCORDANCE WITH ND1002328-001 FOLLOWED BY PAINTING IN ACCORDANCE WITH ND1002328-002.
3. IDENTIFY USING PART NUMBER PER MIL-STD-130.


A
A
③ 4 REQ'D
SEE NOTE 2
②
① 2 REQ'D


FAIR BOTTOM OF ITEM 1 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
.140
.135
FAIR ITEM 1 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001
SEE NOTE 3

PARTIAL SECTION A-A

QUANTITY REQUIRED					ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
				011				
				4	3	1021322-001	PLUG	
				1	2	1021329	CROWN HALF, LOWER	
				2	1	1021320	CROWN HALF, UPPER	

LIST OF PARTS AND MATERIALS

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE W.S.
DRAWN LES. HALL DATE 10 OCT 66
CHECKED 14 OCT 66
APPROVAL 17 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
AC APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

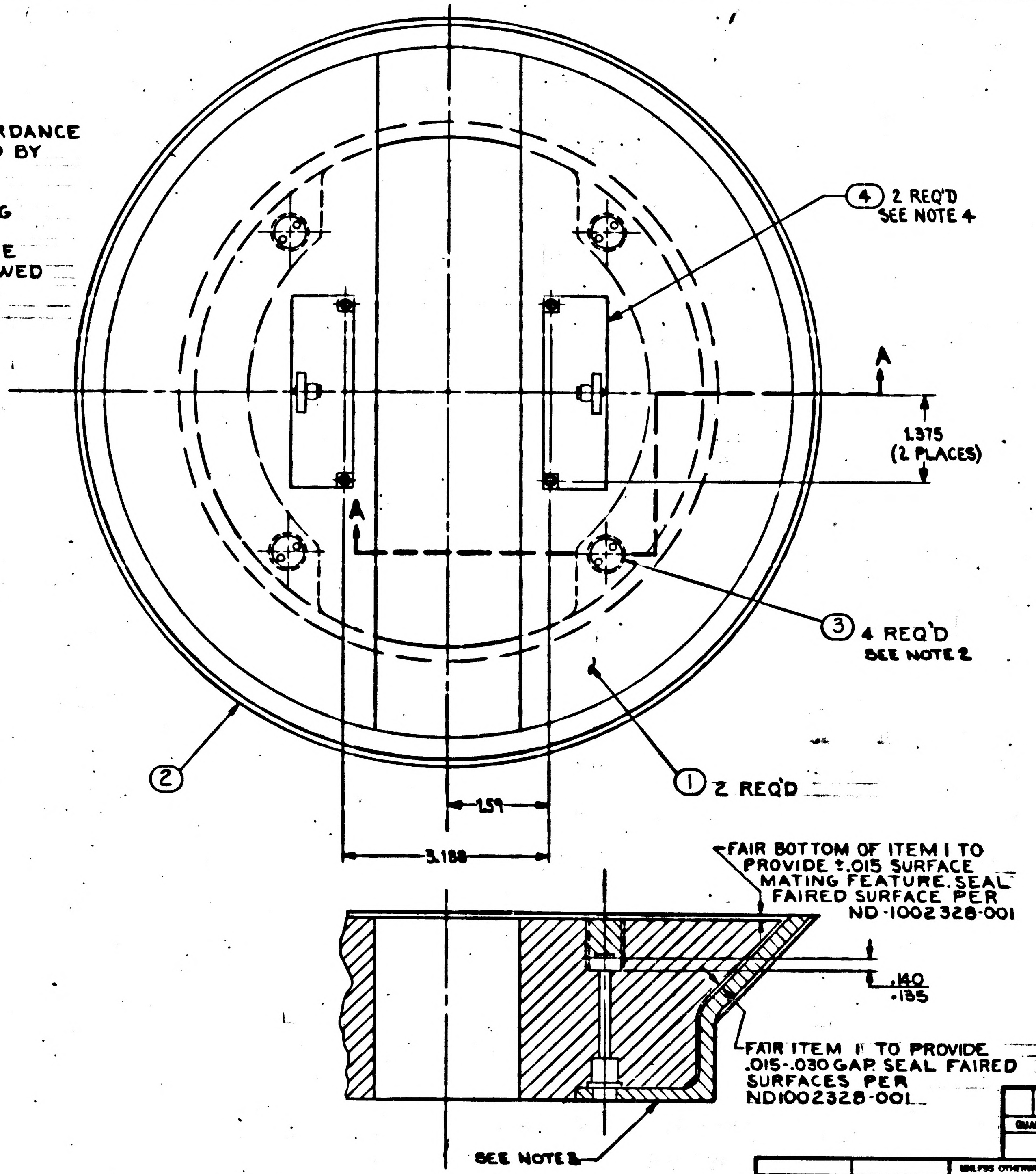
CROWN HALF AND PLUG ASSEMBLY, SEXTANT (MATCHED ASSEMBLY)

SIZE D
CODE IDENT NO. 99974
1021378
SCALE 1/1
SHEET 1 OF 1

MIL 10770-K

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 1. SEAL ITEM 3 IN ACCORDANCE WITH ND1002328-001 FOLLOWED BY PAINTING IN ACCORDANCE WITH ND1002328-002.
3. IDENTIFY USING PART NUMBER PER MIL-STD-130.
4. BOND ITEM 4 TO ITEM 1 USING ITEM 5 P/N 1008903 (EPON 954) PER ND 1002329-001. REMOVE EXCESS ADHESIVE.


④ 2 REQ'D SEE NOTE 4
A
1.375 (2 PLACES)
A
③ 4 REQ'D SEE NOTE 2
②
① 2 REQ'D
1.59
3.188
FAIR BOTTOM OF ITEM 1 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
.140
.135
FAIR ITEM 1 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001
SEE NOTE 2

PARTIAL SECTION A-A

1021378

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	
B		REVISED PER TDRR 33019		9 MAR 67	ALS WD.

021	011	ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
AR		5	1008903	ADHESIVE, EPOXY	
2		4	1021358-021	RETAINER ASSY, DUST COVER	
4	4	3	1021322-001	PLUG	
1	1	2	1021329	CROWN HALF, LOWER	
2	2	1	1021320	CROWN HALF, UPPER	

QUANTITY REQUIRED — LIST OF PARTS AND MATERIALS

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .020
3 PLACE DECIMALS ± .005
ANGLES ± -
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN LES. HALL DATE 10 OCT 66
CHECKED 14 OCT 66
APPROVAL 17 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
AC APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CROWN HALF AND PLUG ASSEMBLY, SEXTANT (MATCHED ASSEMBLY)

SIZE D
CODE IDENT NO. 99974
1021378
SCALE 1/1
SHEET OF 1

D	1021378	2	1

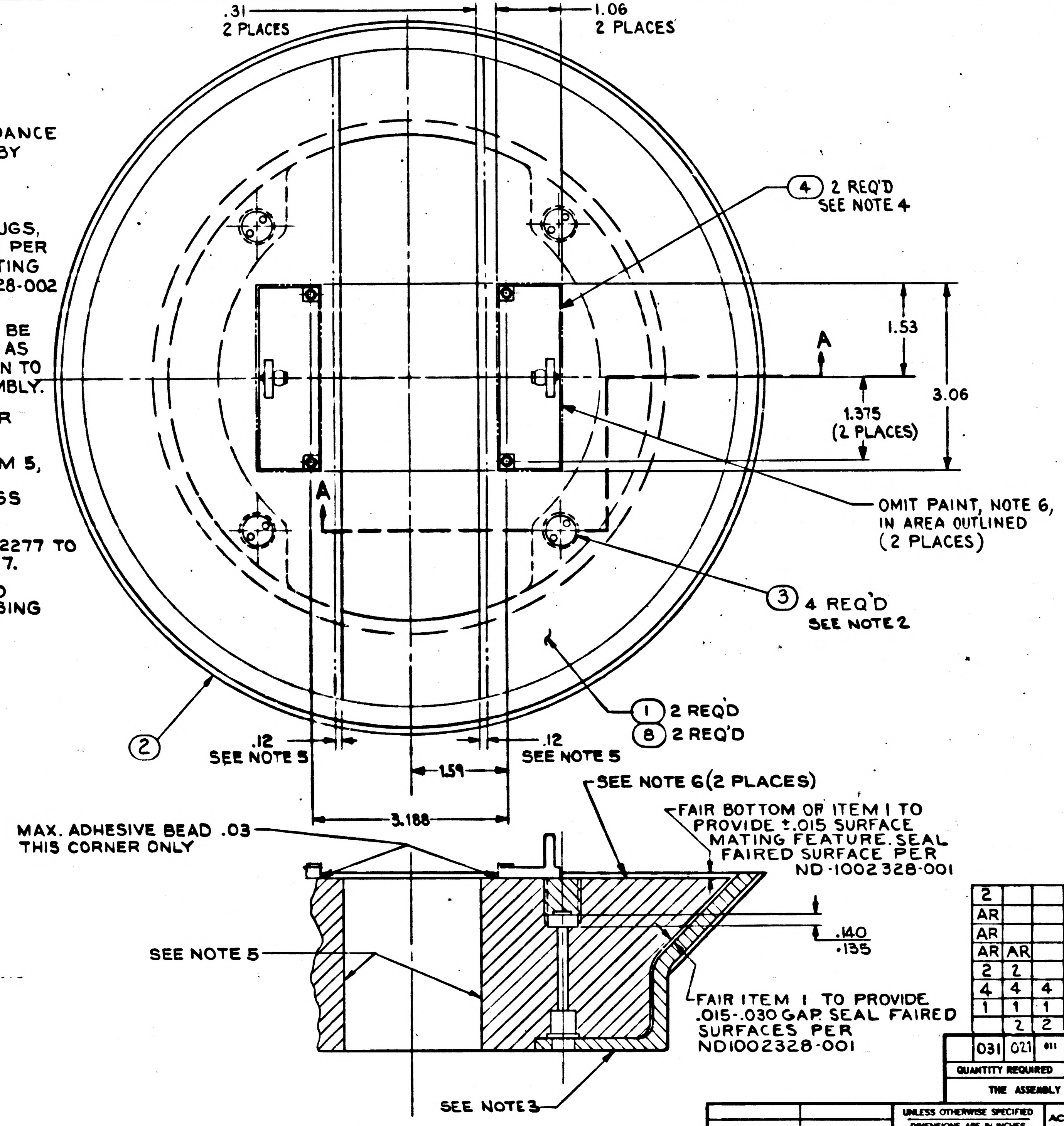
REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
A		INITIAL RELEASE CLASS A PER TDRR 32202		4/1/66	
B		REVISED PER TDRR 33019		9 MAR 67	MLS
C		REVISED PER TDRR 33980	—	8 AUG 67	
D		REVISED PER TDRR 36853		20 SEP 68	

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. INSTALL ITEM 3 AS SHOWN. FAIR PLUG SURFACE TO MATING SURFACE OF ITEM 1. REMOVE PLUGS, ITEM 3, AND SEAL FAIRED SURFACE PER ND 1002328-001 FOLLOWED BY PAINTING OF FAIRED SURFACE PER ND 1002328-002 USING ITEM 6.

   CAUTION: EACH PLUG, ITEM 3, MUST BE REPLACED IN SAME HOLE AS DURING FAIRING OPERATION TO MAINTAIN MATCHED ASSEMBLY.
3. IDENTIFY USING PART NUMBER PER MIL-STD-130.
4. BOND ITEM 4 TO ITEM 1, USING ITEM 5, P/N 1008903 (EPON 954), PER ND 1002329-001. REMOVE EXCESS ADHESIVE.
5. APPLY BLACK COATING PER ND 1002277 TO SPECIFIED SURFACES USING ITEM 7.
6. APPLY GRAY COATING TO SPECIFIED SURFACES PER ND 1002328-002 USING ITEM 6.


.31
2 PLACES
1.06
2 PLACES
4 2 REQ'D
SEE NOTE 4
1.53
A
3.06
1.375
(2 PLACES)
A
OMIT PAINT, NOTE 6, IN AREA OUTLINED (2 PLACES)
3 4 REQ'D
SEE NOTE 2
1 2 REQ'D
8 2 REQ'D
2
.12
SEE NOTE 5
1.59
.12
SEE NOTE 5
3.188
SEE NOTE 6 (2 PLACES)
MAX. ADHESIVE BEAD .03
THIS CORNER ONLY
FAIR BOTTOM OF ITEM 1 TO PROVIDE ±.015 SURFACE MATING FEATURE. SEAL FAIRED SURFACE PER ND-1002328-001
.140
.135
SEE NOTE 5
FAIR ITEM 1 TO PROVIDE .015-.030 GAP. SEAL FAIRED SURFACES PER ND1002328-001
SEE NOTE 3

PARTIAL SECTION A-A

QUANTITY REQUIRED			ITEM NO.	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	CODE IDENT
031	021	011				
2			8	1021320-001	CROWN HALF, UPPER	
AR			7	1012543-001	COATING KIT, LIGHT DIFFUSING	
AR			6	1008910	ENAMEL-EPOXY-AMINE	
AR	AR		5	1008903	ADHESIVE, EPOXY	
2	2		4	1021358-021	RETAINER ASSY, DUST COVER	
4	4	4	3	1021322-001	PLUG	
1	1	1	2	1021329	CROWN HALF, LOWER	
	2	2	1	1021320-000	CROWN HALF, UPPER	

LIST OF PARTS AND MATERIALS

THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ± .020
3 PLACE DECIMALS ± .005
ANGLES ± –
DO NOT SCALE THIS DRAWING
MATERIAL —
APPROVAL

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. MILWAUKEE WIS.
DRAWN LES. HALL DATE 10 OCT 66
CHECKED 14 OCT 66
APPROVAL 17 OCT 66
CONTRACT NAS 9-497
NASA APPROVAL
AC APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

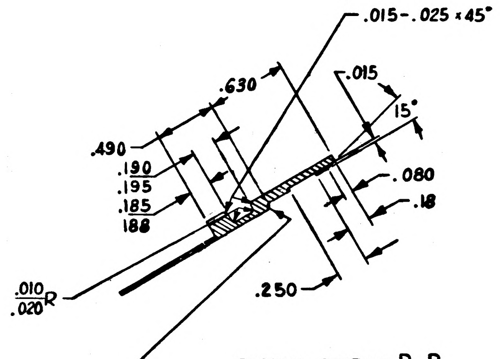
CROWN HALF AND PLUG
ASSEMBLY, SEXTANT
(MATCHED ASSEMBLY)

SIZE D
CODE IDENT NO. 99974
1021378
SCALE 1/1
SHEET 1 OF 1

REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		12/1/66	11-15-66

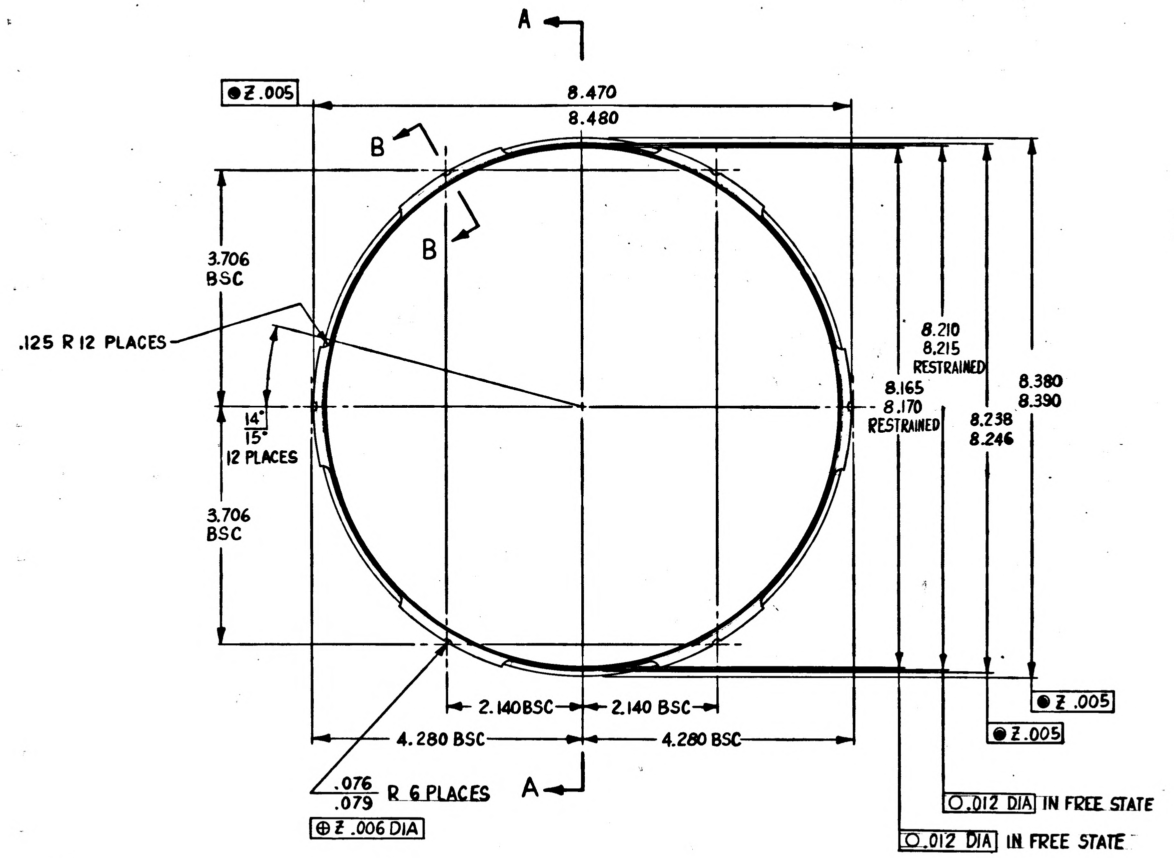
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY, TYPE 6061-T651 PER QQ-A-250/11.
3. UNLESS OTHERWISE SPECIFIED:
   - A. SURFACE ROUGHNESS MUST NOT EXCEED $\overset{125}{\surd}$.
   - B. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
4. MUST BE FREE FROM BURRS.
5. CHEMICAL FILM TREATMENT, CLASS I, PER MIL-C-5541.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.

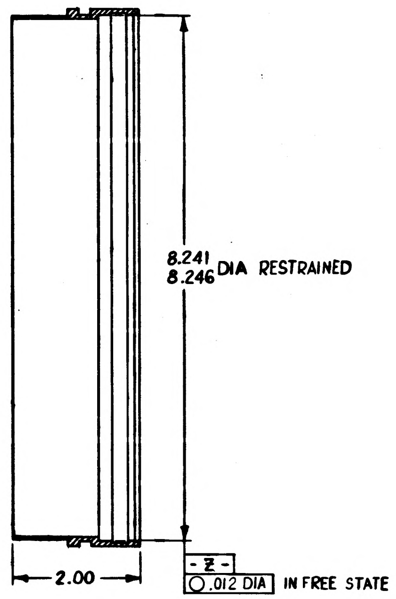


.015-.025 × 45°
.630
.015
15°
.490
.190
.195
.185
.188
.080
.18
.010
.020 R
.250
.015 × 30°-45°

PARTIAL SECTION B-B
SCALE 2:1



A
B
B
● Z .005
8.470
8.480
3.706 BSC
.125 R 12 PLACES
14°
15°
12 PLACES
3.706 BSC
8.210
8.215
RESTRAINED
8.165
8.170
RESTRAINED
8.238
8.246
8.380
8.390
2.140 BSC
2.140 BSC
4.280 BSC
4.280 BSC
● Z .005
● Z .005
.076
.079 R 6 PLACES
⊕ Z .006 DIA
A
○ .012 DIA IN FREE STATE
○ .012 DIA IN FREE STATE



8.241
8.246 DIA RESTRAINED
2.00
- Z -
○ .012 DIA IN FREE STATE

SECTION A-A

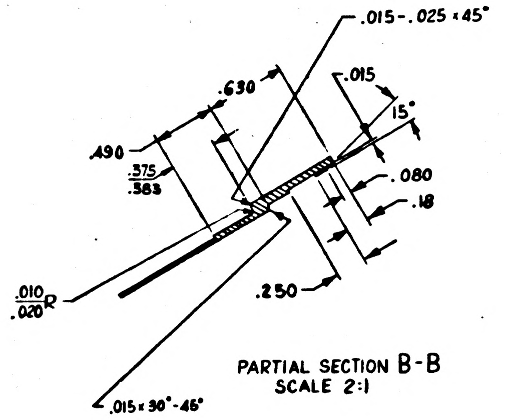
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 1°	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
	DRAWN J. Klonger DATE 7 NOV 66 CHECKED W. Diehl 8 Nov '66 APPROVAL 10 Nov 66	SEAT- SEXTANT COVER		
DO NOT SCALE THIS DRAWING	CONTRACT NAS 9-497			
MATERIAL SEE NOTE 2	NASA APPROVAL	SIZE E	CODE IDENT NO. 99974	1021382
APPROVAL	MIT APPROVAL	SCALE FULL		SHEET 1 OF 1

NEXT ASSY	USED ON
APPLICATION	

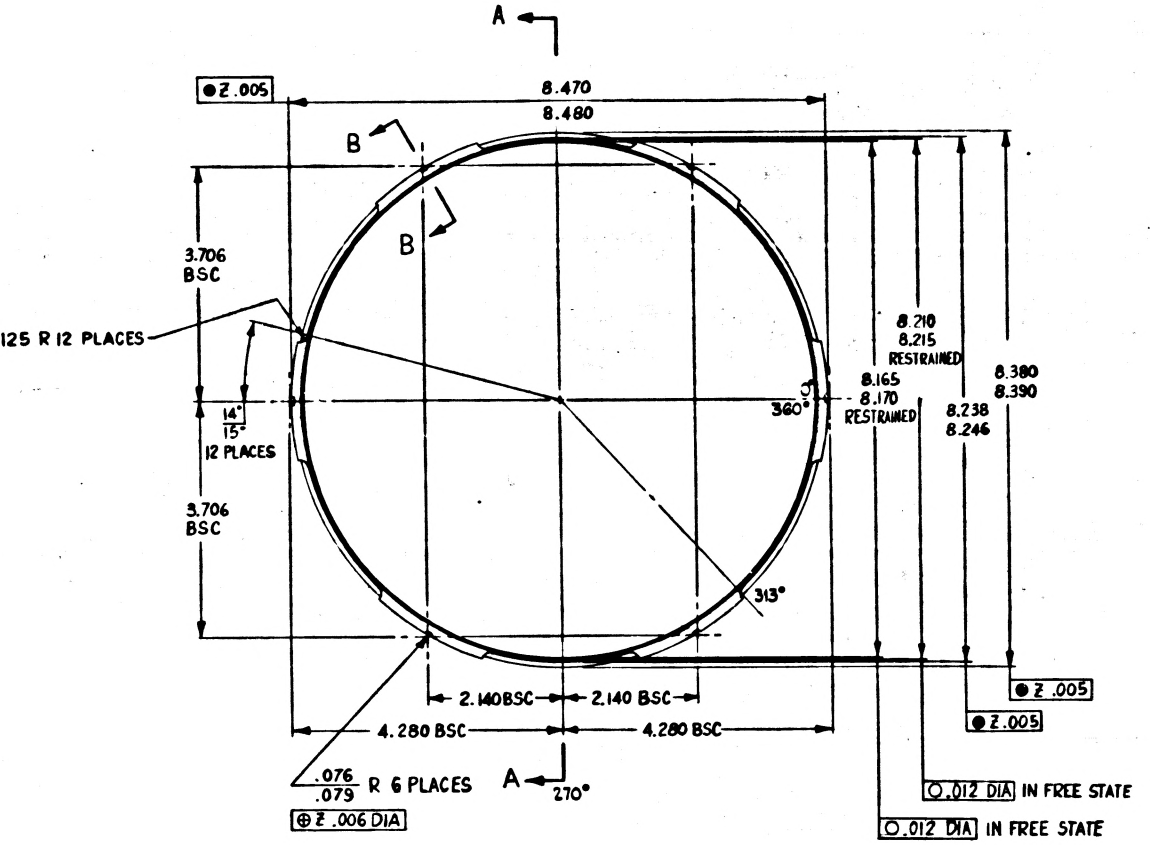
REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TORR 32202		12/1/66	11-15-66
	B	REVISED PER TORR 36115			

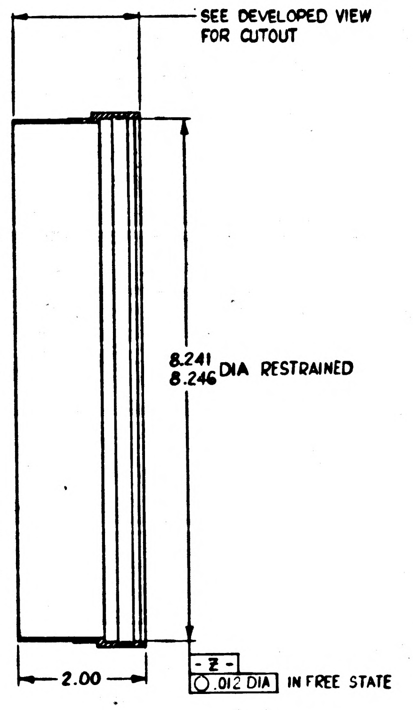
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY, TYPE 6061-T651 PER QQ-A-250/11.
3. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED 125∨.
   B. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
4. MUST BE FREE FROM BURRS.
5. CHEMICAL FILM TREATMENT, CLASS I, PER MIL-C-5541.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.

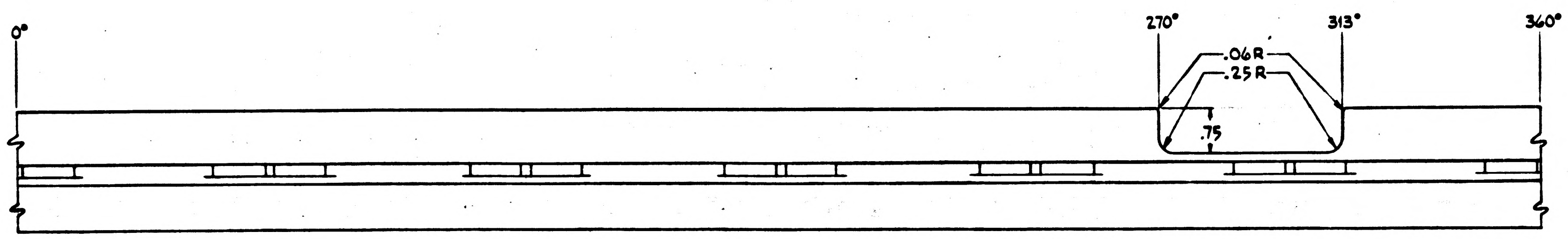

.015-.025 x 45°
.630
.015
15°
.490
.375
.383
.080
.18
.010
.020 R
.250
.015 x 30°-45°

PARTIAL SECTION B-B
SCALE 2:1


A
● Z .005
8.470
8.480
B
B
3.706 BSC
.125 R 12 PLACES
14°
15°
12 PLACES
3.706 BSC
360°
8.210
8.215
RESTRAINED
8.165
8.170
RESTRAINED
8.380
8.390
8.238
8.246
313°
● Z .005
● Z .005
2.140 BSC
2.140 BSC
4.280 BSC
4.280 BSC
.076
.079 R 6 PLACES
⊕ Z .006 DIA
A
270°
○ .012 DIA IN FREE STATE
○ .012 DIA IN FREE STATE


SEE DEVELOPED VIEW FOR CUTOUT
8.241
8.246 DIA RESTRAINED
2.00
-Z-
○ .012 DIA IN FREE STATE

SECTION A-A

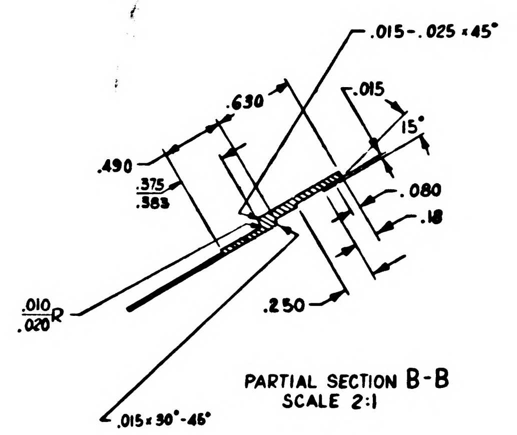

0°
270°
313°
360°
.06R
.25R
.75

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 1°	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
APPLICATION		DO NOT SCALE THIS DRAWING	DRAWN 7 NOV 66 CHECKED 8 Nov '66 APPROVAL 10 NOV 66	SEAT- SEXTANT COVER	
		MATERIAL SEE NOTE 2	CONTRACT NAS 9-497 NASA APPROVAL MIT APPROVAL	SIZE E	CODE IDENT NO. 99974
		APPROVAL		1021382	
				SCALE FULL	SHEET 1 OF 1

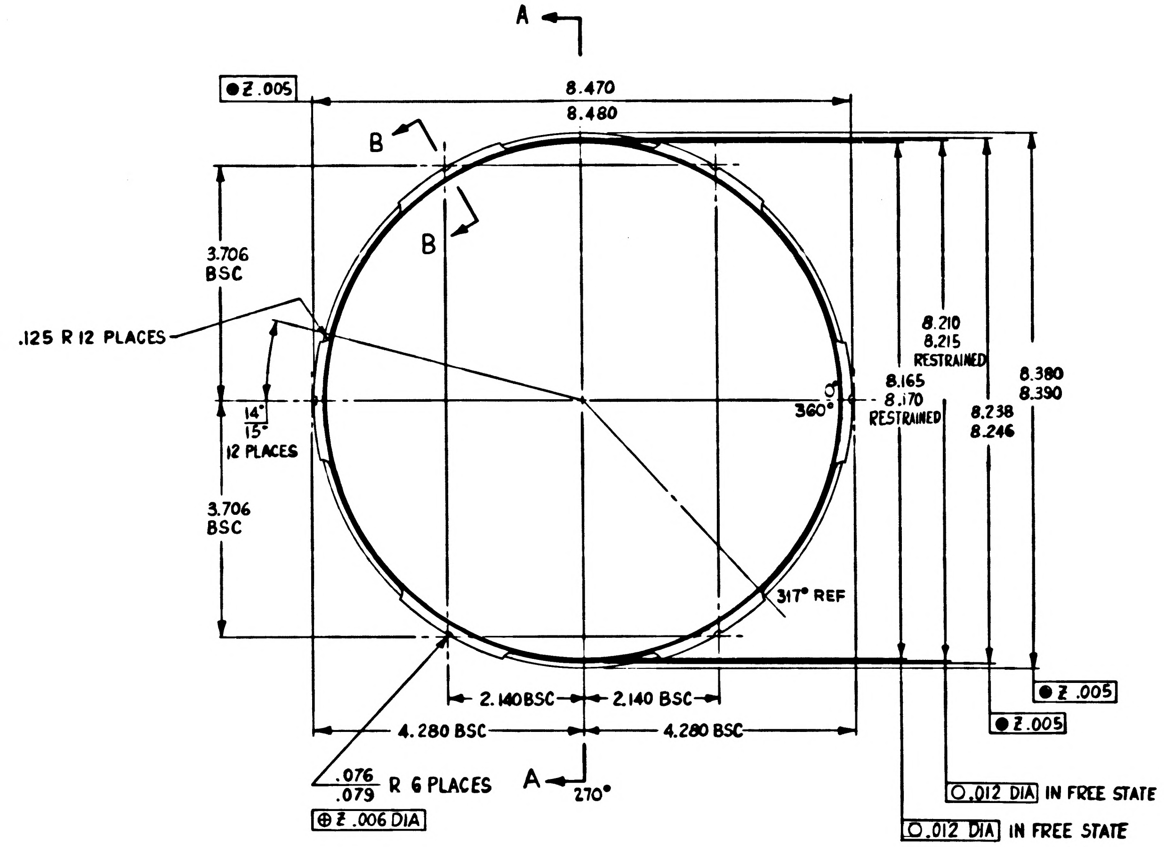
REVISIONS					
ZONE	LTR	DESCRIPTION	CHG. NO.	DATE	APPD
	A	INITIAL RELEASE CLASS A PER TDRR 32202		2/1/66	11-15-66
	B	REVISED PER TDRR 36115			
	C	REVISED PER TDRR 36158		6 MAY 68	JJJ

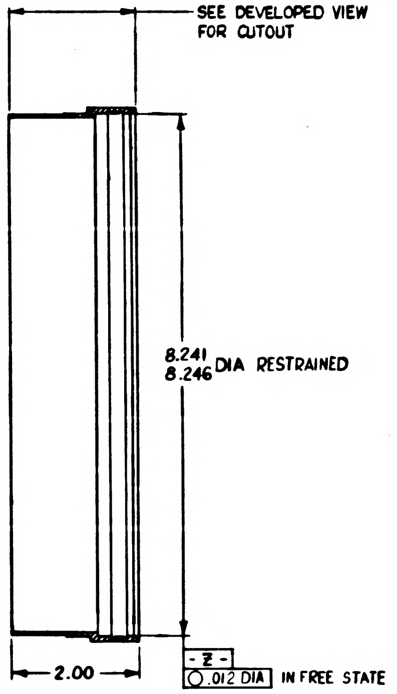
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM ALLOY, TYPE 6061-T651 PER QQ-A-250/11.
3. UNLESS OTHERWISE SPECIFIED:
   A. SURFACE ROUGHNESS MUST NOT EXCEED $\overset{125}{\surd}$.
   B. ALL CORNERS TO BE .005 TO .015 R OR CHAMFER.
4. MUST BE FREE FROM BURRS.
5. CHEMICAL FILM TREATMENT, CLASS I, PER MIL-C-5541.
6. IDENTIFY USING DRAWING NUMBER PER ND1002019.

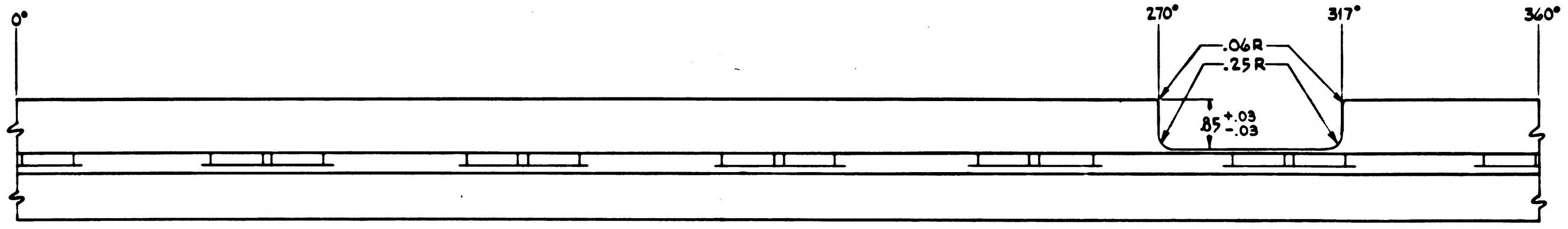

.015-.025 × 45°
.630
.015
15°
.490
.375
.385
.080
.18
.010
.020 R
.250
.015 × 30°-45°

PARTIAL SECTION B-B
SCALE 2:1


A
● Z .005
8.470
8.480
B
B
3.706 BSC
.125 R 12 PLACES
14°
15°
12 PLACES
3.706 BSC
360°
8.210
8.215
RESTRAINED
8.165
8.170
RESTRAINED
8.238
8.246
8.380
8.390
317° REF
2.140 BSC
2.140 BSC
4.280 BSC
4.280 BSC
● Z .005
● Z .005
.076
.079 R 6 PLACES
⊕ Z .006 DIA
A
270°
○ .012 DIA IN FREE STATE
○ .012 DIA IN FREE STATE


SEE DEVELOPED VIEW FOR CUTOUT
8.241
8.246 DIA RESTRAINED
2.00
-Z-
○ .012 DIA IN FREE STATE

SECTION A-A


0°
270°
317°
360°
.06 R
.25 R
.85 +.03 -.03

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .005 ANGLES ± 1°	AC ELECTRONICS DIVISION GENERAL MOTORS CORP MILWAUKEE WIS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DO NOT SCALE THIS DRAWING	DRAWN J. Klinger DATE 7 NOV 66 CHECKED 8 NOV 66 APPROVAL 10 Nov CONTRACT NAS 9-497	SEAT- SEXTANT COVER		
MATERIAL SEE NOTE 2	NASA APPROVAL MIT APPROVAL	SIZE E	CODE IDENT NO. 99974	1021382
APPROVAL		SCALE FULL		SHEET OF 1

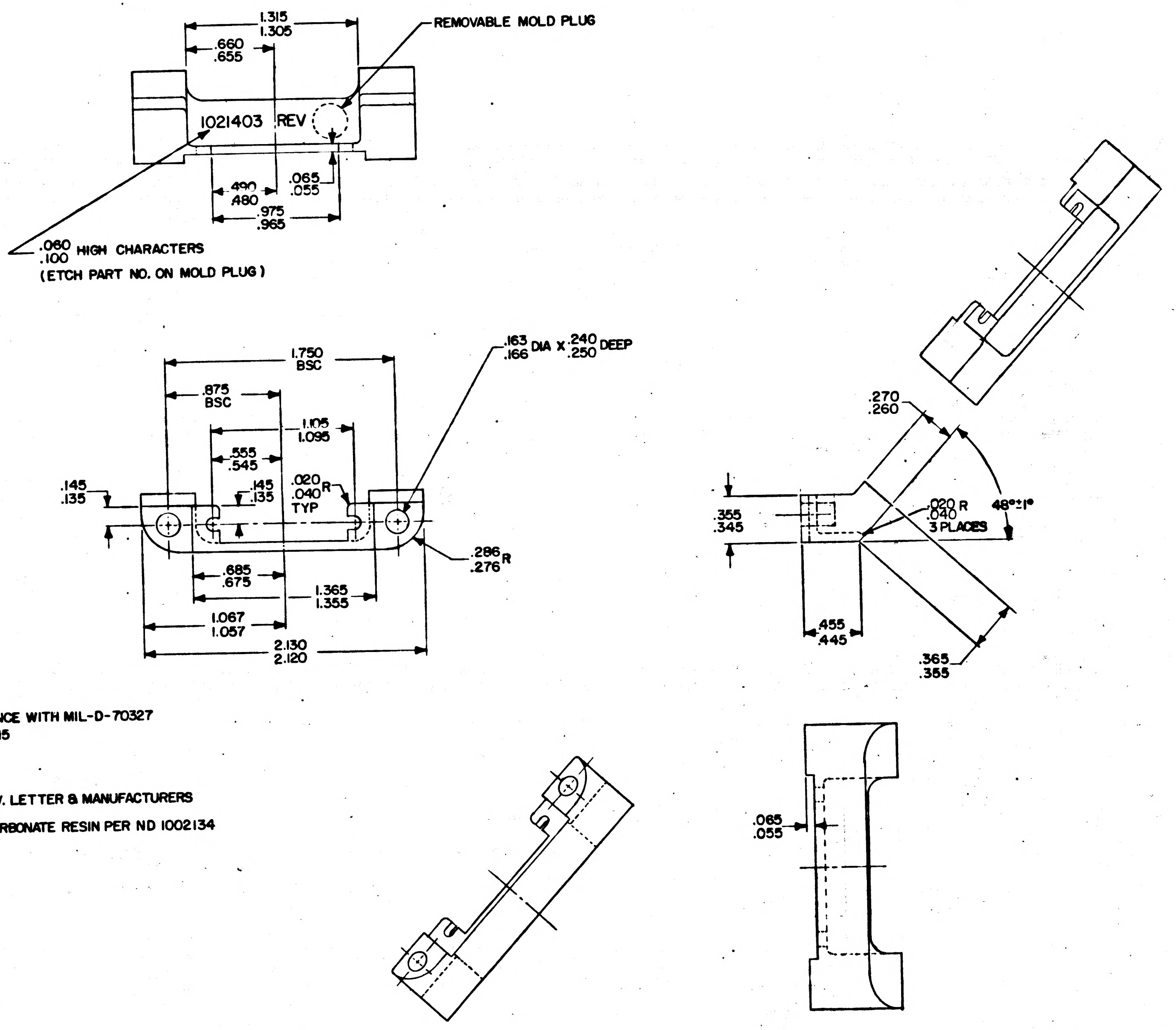
NEXT ASSY	USED ON
APPLICATION	

1021382

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 13969

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED



1.315
1.305
.660
.655
REMOVABLE MOLD PLUG
1021403 REV
.490
.480
.065
.055
.975
.965
.060
.100 HIGH CHARACTERS
(ETCH PART NO. ON MOLD PLUG)
1.750
BSC
.875
BSC
1.105
1.095
.555
.545
.163
.166 DIA X .240
.250 DEEP
.145
.135
.145
.135
.020
.040 R
TYP
.286
.276 R
.685
.675
1.365
1.355
1.067
1.057
2.130
2.120
.270
.260
.355
.345
.020 R
.040
3 PLACES
48°±1°
.455
.445
.365
.355
.065
.055

NOTES:

1. INTERPRET DWG. IN ACCORDANCE WITH MIL-D-70327
2. BREAK SHARP EDGES .005/.015
3. 63√ FINISH ALL OVER
4. INSIDE CORNERS .010 R MAX
5. IDENTIFY USING DWG. NO., REV. LETTER & MANUFACTURERS SYMBOL PER ND 1002019
6. MATERIAL: MOLDED POLYCARBONATE RESIN PER ND 1002134

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1000207	
1000206	
1001508	DL1000201
1001506	DL1001500

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± ___ DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 6

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

		DATE
DRAWN	J C FUCHS	10-7-64
CHECKED		
APPROVED		11-4-64
APPROVED		
APPROVED MIT	W Kuyfer	4/6/64
APPROVED MSC	W J Robinson	11-4-64

BRACKET,
CONNECTOR
INTERGIMBAL SUBASSEMBLY

CODE IDENT NO.	SIZE	DRAWING NO.
	D	1021403

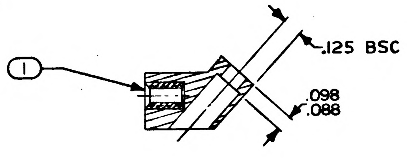
SCALE 2/1
SHEET 1 OF 2

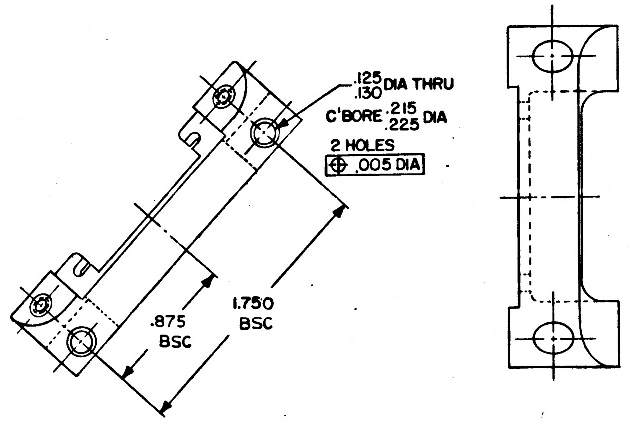
1021403

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 13969

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED





NOTES:

1. INTERPRET DWG. IN ACCORDANCE WITH MIL-D-70327

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010850-002		INSERT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000207	
1000206	
1001508	DL1000201
1001506	DL 1001500

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

		DATE
DRAWN	J C FUCHS	10-28-64
CHECKED		
APPROVED	SAHoff	11-4-64
APPROVED		
APPROVED MIT	W Kupfer	11/4/64
APPROVED MSC		11-4-64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET,
CONNECTOR,
INTERGIMBAL SUBASSEMBLY

CODE IDENT NO.
SIZE D
DRAWING NO. 1021403
SCALE 2/1
SHEET 2 OF 2

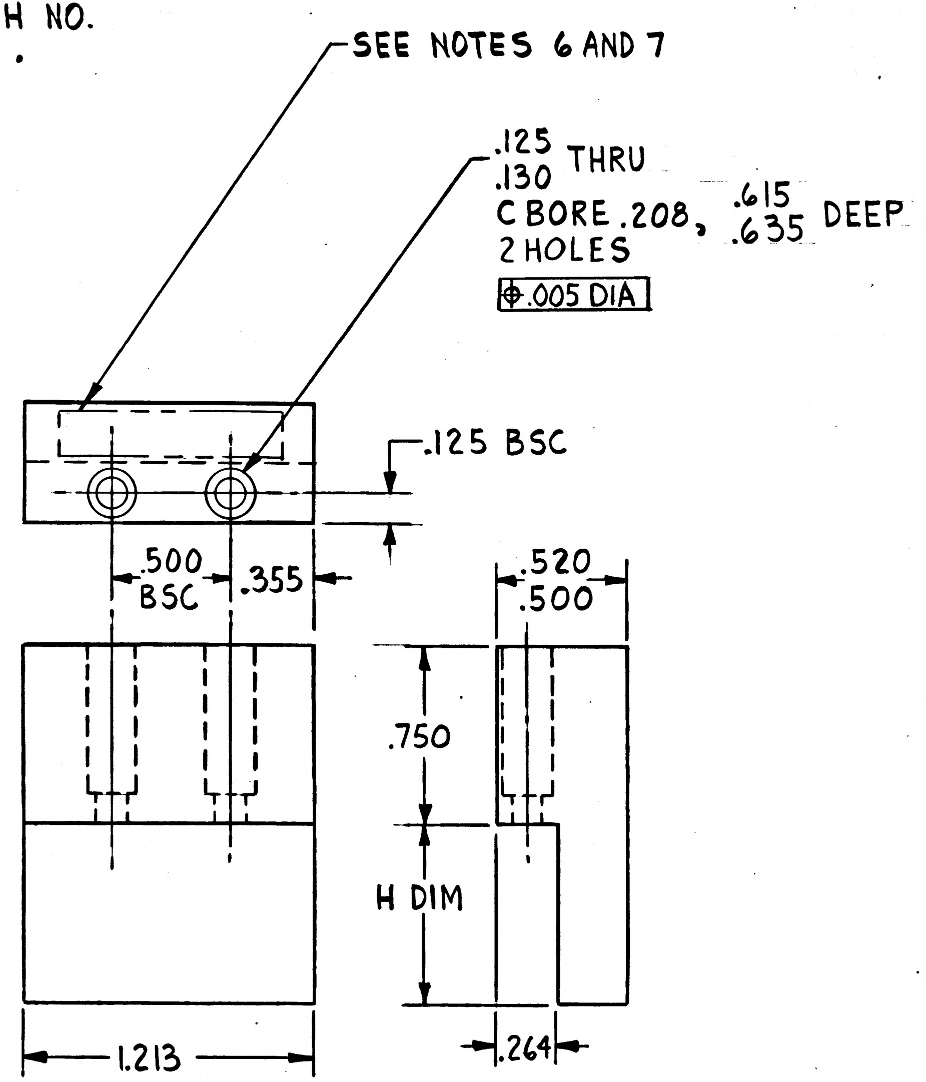
1021403

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: COML MALLORY 3000 (OR EQUIVALENT)
   MALLORY METALLURGICAL CO.
   3029 EAST WASHINGTON ST.
   INDIANAPOLIS 6, INDIANA
3. FINISH: ZINC PLATE PER QQ-Z-325 TYPE II, CLASS 2.
4. BREAK ALL SHARP EDGES .005-.015.
5. 250✓ FINISH ALL OVER.
6. WEIGHT SHALL BE MARKED ON EACH PIECE .10-.14 HIGH COLOR BLACK PER ND 1002019 WEIGHT TO BE MEASURED TO NEAREST .01 OUNCE.
7. IDENTIFY USING DRAWING NO, APPLICABLE DASH NO. AND REVISION LETTER PER ND1002019.

REVISIONS TDRR 14674

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.



PART NO	H DIM	WT. OZ CALC (REF)
1021405-1	.375	5.25
1021405-2	.500	5.61
1021405-3	.625	5.97

NEXT ASSY	USED ON
1001500	1001500

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + ___ −
DECIMALS ±.005
ANGLES + ___ −
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN F Koracin DATE 19 OCT 64
CHECKED 26 OCT 64
APPROVAL
APPROVAL 7 Dec 64
NASA APPROVAL 12-5-64
MIT APPROVAL 8 Dec 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WEIGHT, BALANCE
STABLE MEMBER

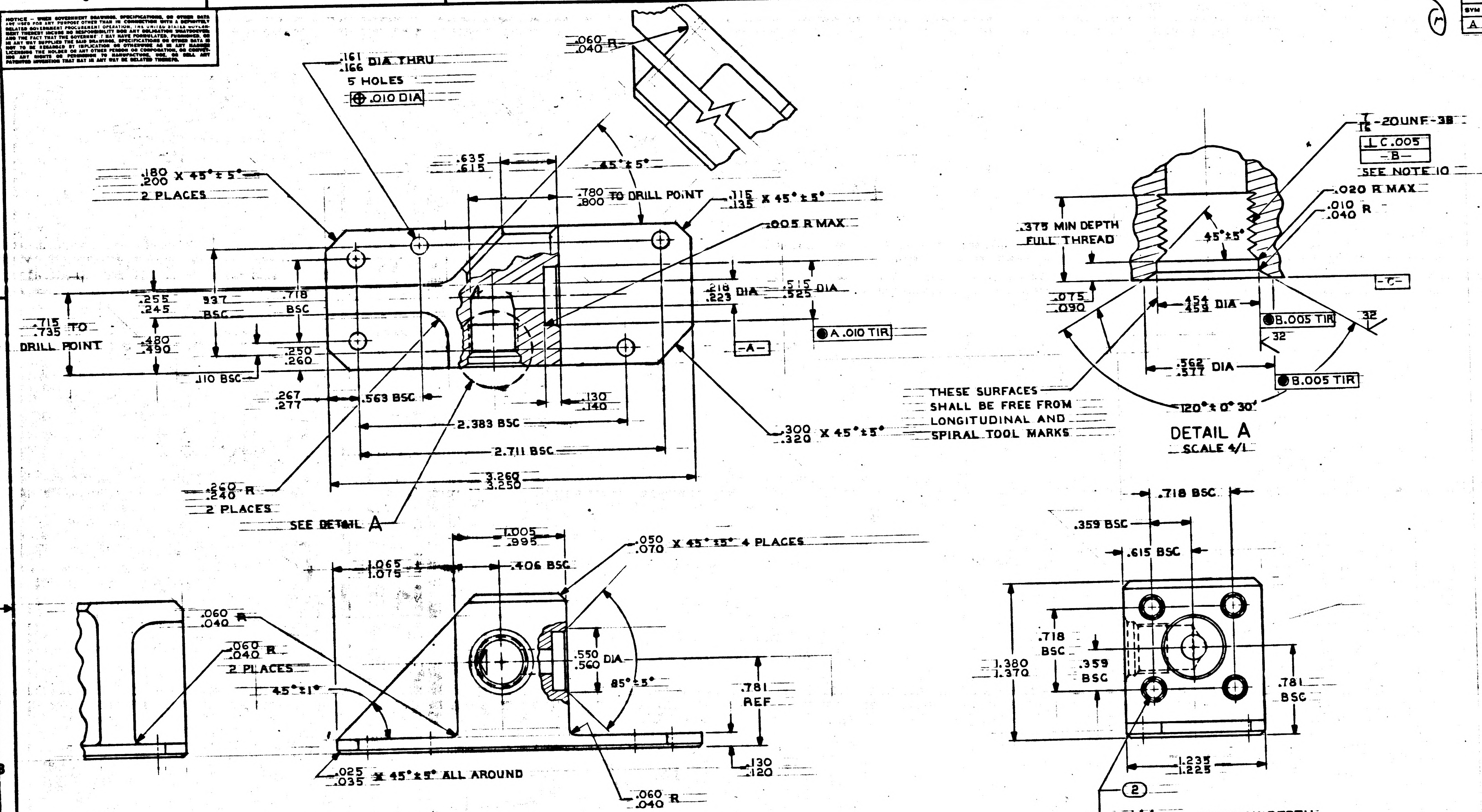
CODE IDENT NO.
SIZE C
1021405
SCALE 2:1
SHEET 1 OF 1

MIL 1077C—P

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED	
A		REVISED TDRR 17165			8MAR65		

REVISIONS TDRR 15343


.161 .166 DIA THRU
5 HOLES
⊕ .010 DIA
.060 .040 R
.180 .200 X 45° ± 5°
2 PLACES
.635 .615
45° ± 5°
.780 .800 TO DRILL POINT
.115 .135 X 45° ± 5°
.005 R MAX
.255 .245
.337 BSC
.718 BSC
.715 .735 TO DRILL POINT
.480 .490
.250 .260
.110 BSC
.267 .277
.563 BSC
.218 .223 DIA
.515 .525 DIA
● A .010 TIR
-A-
.130 .140
2.383 BSC
2.711 BSC
3.260 3.250
.300 .320 X 45° ± 5°
.260 .240 R
2 PLACES
SEE DETAIL A
1.005 .995
1.065 1.075
.406 BSC
.050 .070 X 45° ± 5° 4 PLACES
.060 .040 R
.060 .040 R
2 PLACES
45° ± 1°
.550 .560 DIA
85° ± 5°
.781 REF
.130 .120
.025 .035 X 45° ± 5° ALL AROUND
.060 .040 R
7/16-20UNF-3B
⊥ C .005
-B-
SEE NOTE 10
.020 R MAX
.010 .040 R
.375 MIN DEPTH FULL THREAD
45° ± 5°
-C-
.075 .090
.454 .459 DIA
● B .005 TIR
32
32
.562 .577 DIA
● B .005 TIR
THESE SURFACES SHALL BE FREE FROM LONGITUDINAL AND SPIRAL TOOL MARKS
120° ± 0° 30'
DETAIL A
SCALE 4/1
.718 BSC
.359 BSC
.615 BSC
1.380 1.370
.718 BSC
.359 BSC
.781 BSC
1.235 1.225
②

.144 .150 DIA .379 MAX DEPTH
CSK 120° ± 5° TO .170 .210 DIA
USE TAP FSN 5136-779-4469
PITCH DIA .1601 .1583
MAJOR DIA .1733 MIN
.240 MIN FULL THREAD
INSTALL ITEM ② PER MS33646
REMOVE TANG SEE NOTE 6
4 HOLES SPACED AS SHOWN
⊕ A .005 DIA

NOTES
1. INTERPRET DRAWING IN ACCORANCE WITH MIL-D-70327
2. MATERIAL: ALUMINUM ALLOY PLATE 6061 TEMPER T6
ALT SPEC QQ-A-250/11 TEMPER T6
3. .125/ FINISH ALL OVER UNLESS OTHERWISE SPECIFIED
4. REMOVE BURRS AND BREAK SHARP EDGES .005/.015
5. ANODIC COAT PER MIL-A-8625 TYPE I, CLEAR
6. INSTALL ITEM ② AFTER ANODIZING
7. IDENTIFY USING DRAWING NO., REVISION LETTER, AND
MANUFACTURERS SYMBOL PER ND1002019
8. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND 1002223
9. PACKAGE CLEANED PART IN MANNER THAT WILL PREVENT
CONTAMINATION OF THE COOLANT PASSAGE
10. THREADS MUST CONFORM TO MIL-S-7742

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	MS21209-C0615		INSERT, SCREW THREAD	2
1	1021406-1		ADAPTER PLATE, COOL. HOSE BYP	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1021407	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

MIT
INSTRUMENTATION LAB
CAMBRIDGE. MASS.

DRAWN J. Falzone 6 Nov 64
CHECKED
APPROVED 15 Dec 64
APPROVED
APPROVED MIT 6 Jan 65
APPROVED MSC 1-6-65
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADAPTER PLATE,
COOLANT HOSE BYPASS

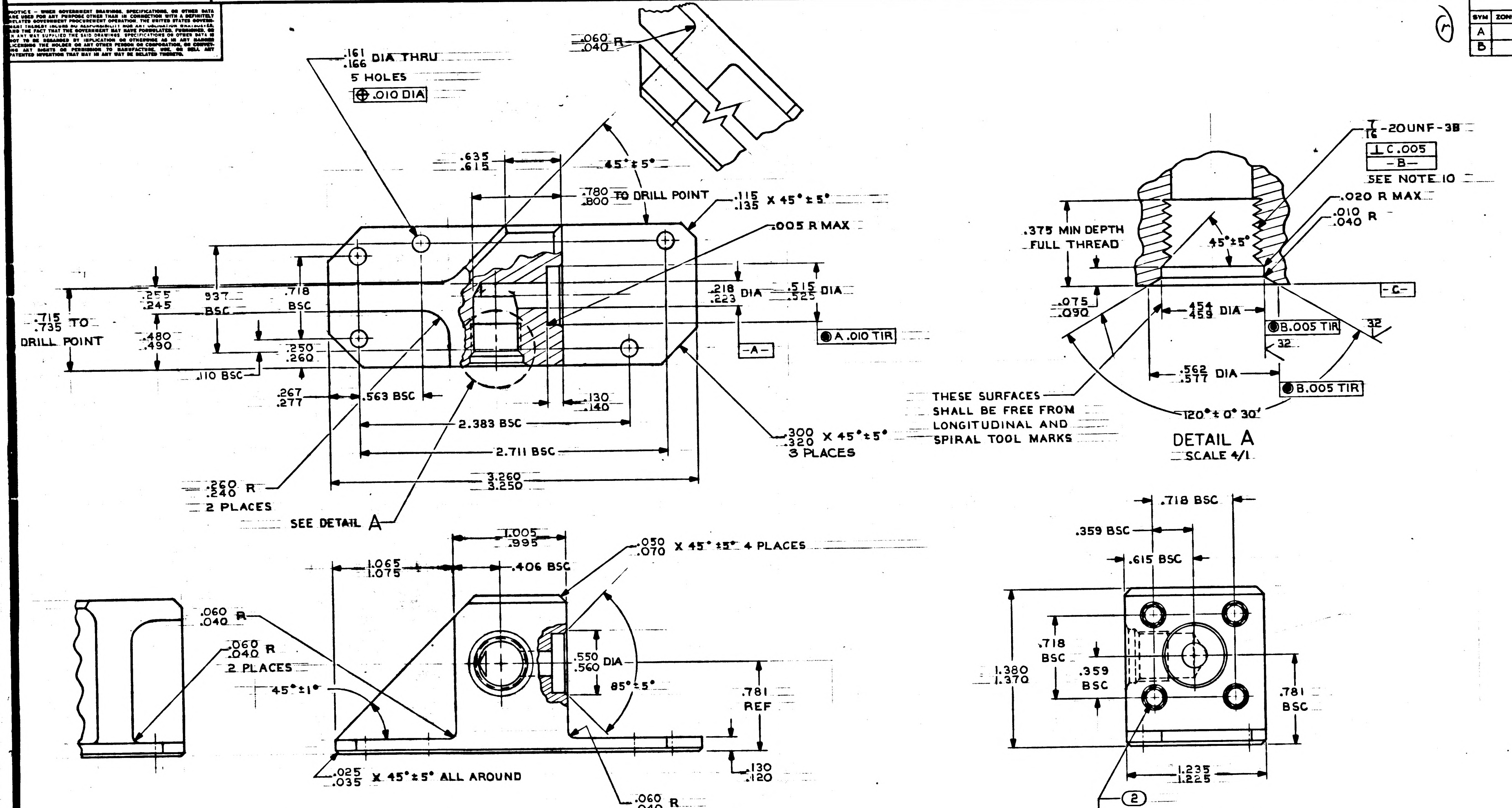
CODE IDENT NO.
SIZE D
DRAWING NO. 1021406
SCALE 2/1
SHEET 1 OF 1

MASTER

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 15343

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED	
A		REVISED TDRR 17165			8 Mar 65		W.K.
B		REVISED TDRR 17691			19 MAR 65		W.K.


.060 R
.040
.161 DIA THRU
.166
5 HOLES
⊕ .010 DIA
.635
.615
45° ± 5°
.780 TO DRILL POINT
.800
.115 X 45° ± 5°
.135
.005 R MAX
.255
.245
.937 BSC
.718 BSC
.715 TO DRILL POINT
.735
.480
.490
.250
.260
.110 BSC
.218 DIA
.223
.515 DIA
.525
● A .010 TIR
-A-
.267
.277
.563 BSC
.130
.140
2.383 BSC
2.711 BSC
3.260
3.250
.300 X 45° ± 5°
.320
3 PLACES
.260 R
.240
2 PLACES
SEE DETAIL A
7/16-20UNF-3B
⊥ C .005
-B-
SEE NOTE 10
.020 R MAX
.010 R
.040
.375 MIN DEPTH FULL THREAD
45° ± 5°
-C-
.075
.090
.454 DIA
.459
● B .005 TIR
32
32
.562 DIA
.577
● B .005 TIR
120° ± 0° 30'
THESE SURFACES SHALL BE FREE FROM LONGITUDINAL AND SPIRAL TOOL MARKS
1.005
.995
1.065
1.075
.406 BSC
.050 X 45° ± 5° 4 PLACES
.070
.060 R
.040
.060 R
.040
2 PLACES
45° ± 1°
.550 DIA
.560
85° ± 5°
.781 REF
.130
.120
.025 X 45° ± 5° ALL AROUND
.035
.060 R
.040
.718 BSC
.359 BSC
.615 BSC
1.380
1.370
.718 BSC
.359 BSC
.781 BSC
1.235
1.225

DETAIL A
SCALE 4/1

②
.144/.150 DIA .379 MAX DEPTH
CSK 120° ± 5° TO .170/.210 DIA
USE TAP FSN 5136-779-4469
PITCH DIA .1601/.1583
MAJOR DIA .1733 MIN
.240 MIN FULL THREAD
INSTALL ITEM ② PER MS33646
REMOVE TANG SEE NOTE 6
4 HOLES SPACED AS SHOWN
⊕ A .005 DIA

NOTES
1. INTERPRET DRAWING IN ACCORANCE WITH MIL-D-70327
2. MATERIAL: ALUMINUM ALLOY PLATE 6061 TEMPER T6
ALT SPEC QQ-A-250/11 TEMPER T6
3. .125√ FINISH ALL OVER UNLESS OTHERWISE SPECIFIED
4. REMOVE BURRS AND BREAK SHARP EDGES .005/.015
5. ANODIC COAT PER MIL-A-8625 TYPE I, CLEAR
6. INSTALL ITEM ② AFTER ANODIZING
7. IDENTIFY USING DRAWING NO., REVISION LETTER, AND
MANUFACTURERS SYMBOL PER ND1002019
8. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND 1002223
9. PACKAGE CLEANED PART IN MANNER THAT WILL PREVENT
CONTAMINATION OF THE COOLANT PASSAGE
10. THREADS MUST CONFORM TO MIL-S-7742

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	MS21209-C0615		INSERT, SCREW THREAD	2
1	1021406-1		ADAPTER PLATE, COOL. HOSE BYP	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1021407	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± —— DECIMALS ± —— ANGLES ± ——
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN J. Falzone 6 Nov 64
CHECKED
APPROVED SAHoff 15 Dec 64
APPROVED
APPROVED MIT W. Kupfer 6 Jan 65
APPROVED MSC W. J. Rhine 1-6-65
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

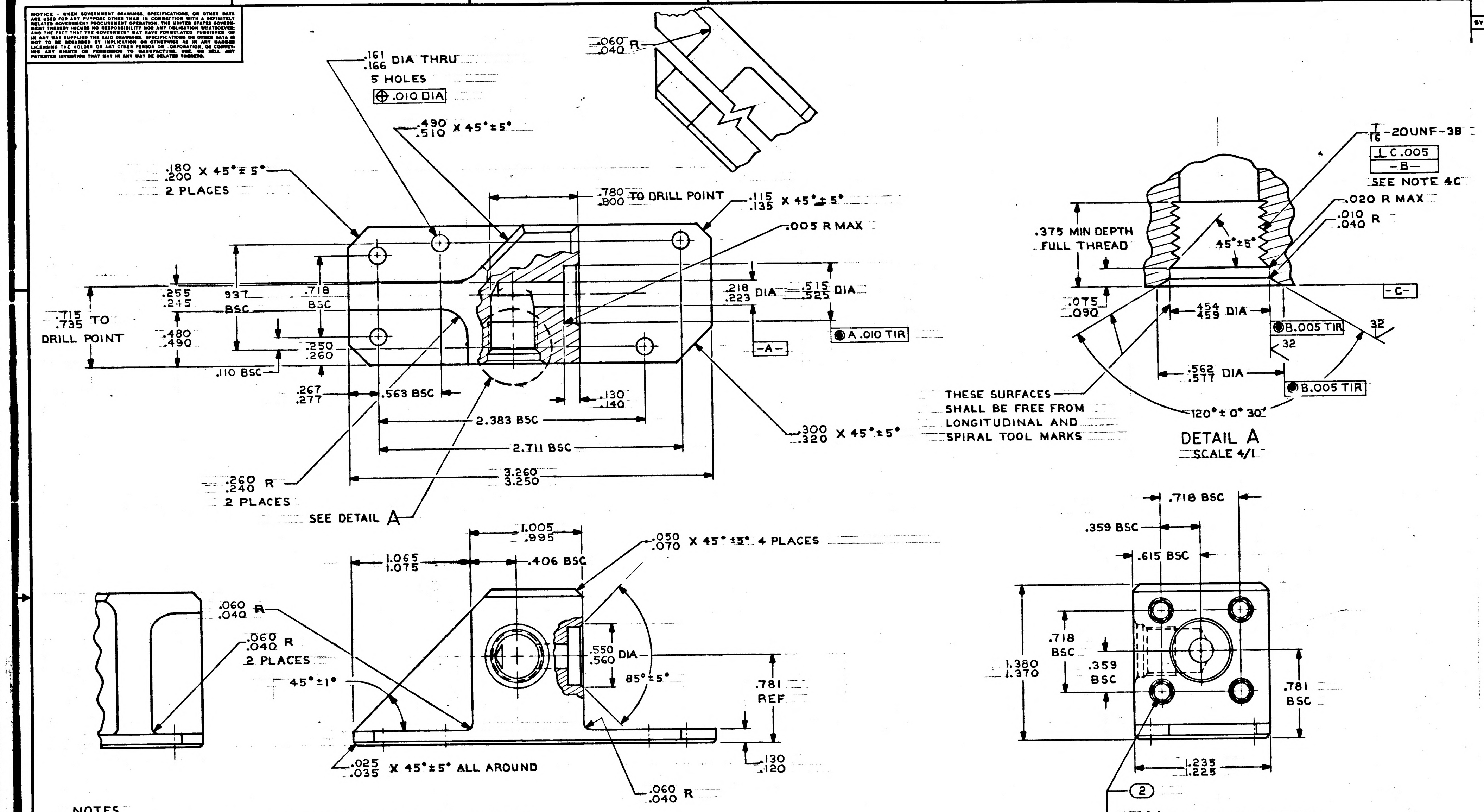
ADAPTER PLATE, COOLANT HOSE BYPASS

CODE IDENT NO.
SIZE D
DRAWING NO. 1021406
SCALE 2/1
SHEET 1 OF 1

1021406 B

REVISIONS	TDRR 15343					
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


.060 .040 R
.161 .166 DIA THRU
5 HOLES
⊕ .010 DIA
.490 .510 X 45°±5°
.180 .200 X 45°±5°
2 PLACES
.780 .800 TO DRILL POINT
.115 .135 X 45°±5°
.005 R MAX
.255 .245
.937 BSC
.718 BSC
.715 .735 TO DRILL POINT
.480 .490
.250 .260
.110 BSC
.218 .223 DIA
.515 .525 DIA
● A .010 TIR
-A-
.267 .277
.563 BSC
.130 .140
2.383 BSC
2.711 BSC
3.260 3.250
.300 .320 X 45°±5°
.260 .240 R
2 PLACES
SEE DETAIL A
1/16-20UNF-3B
⊥ C .005
-B-
SEE NOTE 4C
.020 R MAX
.010 .040 R
.375 MIN DEPTH FULL THREAD
45°±5°
-C-
.075 .090
.454 .459 DIA
● B .005 TIR
32
.562 .577 DIA
● B .005 TIR
THESE SURFACES SHALL BE FREE FROM LONGITUDINAL AND SPIRAL TOOL MARKS
120°± 0° 30'
DETAIL A
SCALE 4/1
1.005 .995
1.065 1.075
.406 BSC
.050 .070 X 45°±5° 4 PLACES
.060 .040 R
.060 .040 R
2 PLACES
45°±1°
.550 .560 DIA
85°±5°
.781 REF
.130 .120
.025 .035 X 45°±5° ALL AROUND
.060 .040 R
.718 BSC
.359 BSC
.615 BSC
.718 BSC
1.380 1.370
.359 BSC
.781 BSC
1.235 1.225
2

.144 .150 DIA .379 MAX DEPTH
CSK 120°±5° TO .170 .210 DIA
USE TAP FSN 5136-779-4469
PITCH DIA .1601 .1583
MAJOR DIA .1733 MIN
.240 MIN FULL THREAD
INSTALL ITEM ② PER MS33646
REMOVE TANG SEE NOTE 6
4 HOLES SPACED AS SHOWN
⊕ A .005 DIA

NOTES

1. INTERPRET DRAWING IN ACCORANCE WITH MIL-D-70327
2. MATERIAL: ALUMINUM ALLOY PLATE 6061 TEMPER T6
   ALT SPEC QQ-A-250/11 TEMPER T6
3. .125√ FINISH ALL OVER UNLESS OTHERWISE SPECIFIED
4. REMOVE BURRS AND BREAK SHARP EDGES .005/.015
5. ANODIC COAT PER MIL-A-8625 TYPE I, CLEAR
6. INSTALL ITEM ② AFTER ANODIZING
7. IDENTIFY USING DRAWING NO., REVISION LETTER, AND
   MANUFACTURERS SYMBOL PER ND1002019
8. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND 1002223
9. PACKAGE CLEANED PART IN MANNER THAT WILL PREVENT
   CONTAMINATION OF THE COOLANT PASSAGE

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	MS21209-C0615		INSERT, SCREW THREAD	2
1	———		ADAPTER PLATE, COOL. HOSE BYP	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1021407	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± —— DECIMALS ± —— ANGLES ± ——
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN	J. Falzone	6 Nov 64
CHECKED		
APPROVED	[illegible]	15 Dec 64
APPROVED		
APPROVED MIT	W. Copper	6 Jan 65
APPROVED MSC	W. J. Rhine	1-6-65
		DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

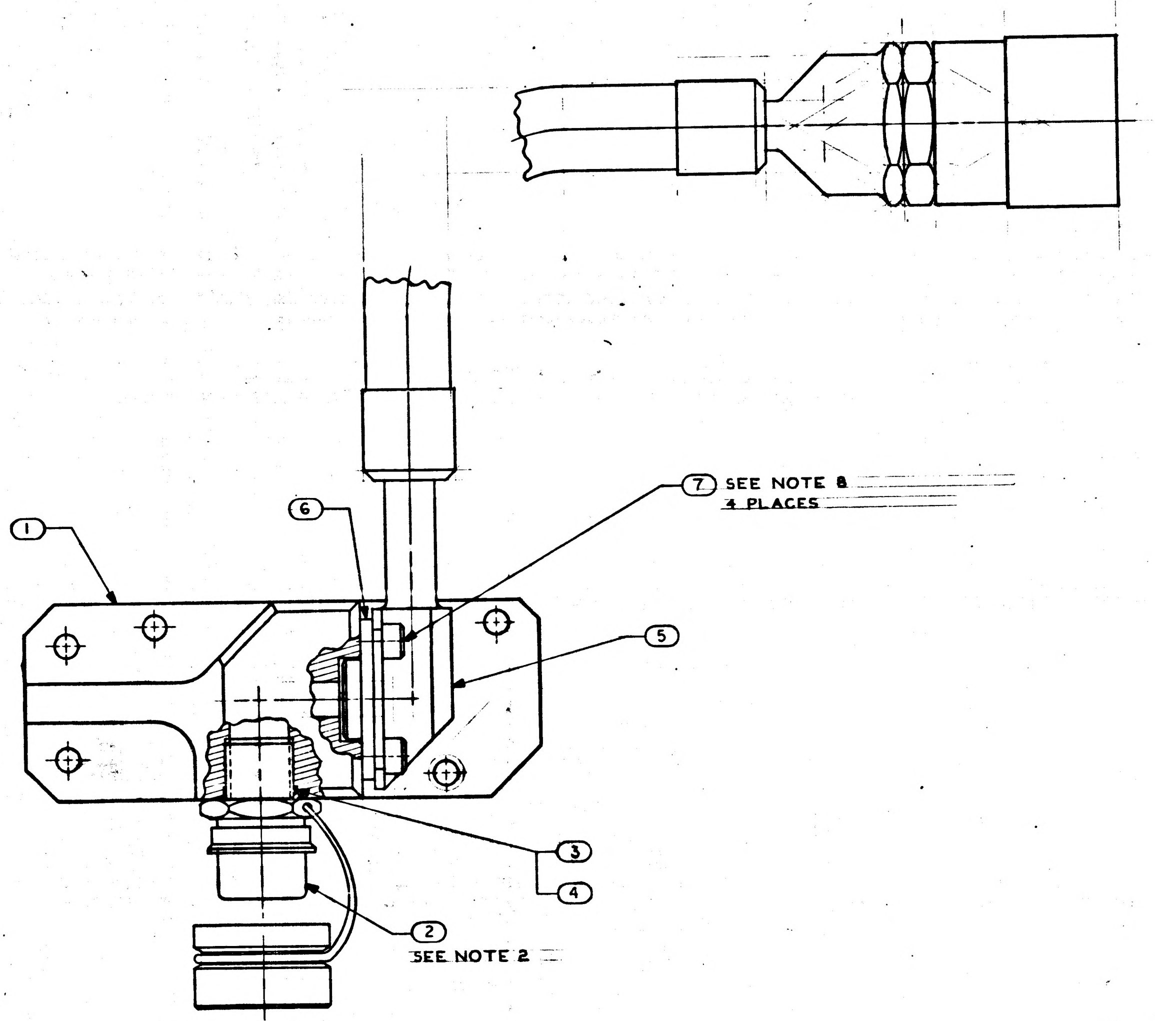
ADAPTER PLATE,
COOLANT HOSE BYPASS

CODE IDENT NO.
SIZE D
DRAWING NO. 1021406
SCALE 2/1
SHEET 1 OF 1

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 15343

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED TDRR 17164			7 Jan 65	



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
2. ASSEMBLE ITEM ② TO ITEM ① WITH 70 IN-LB ±7% TORQUE
3.
4. IDENTIFY USING DRAWING NO., REVISION LETTER AND MANUFACTURERS SYMBOL PER ND1002019
5. LEAK TEST: THE MAXIMUM LEAK RATE IS 5×10^{-6} STD CC/SEC OF HELIUM WHEN INTERNALLY PRESSURIZED TO 77.5 ± .5 PSIG
6. ASSEMBLY SHALL BE PACKED AND SHIPPED IN A MANNER THAT WILL:
   - A. PREVENT CONTAMINATION OF INTERNAL SURFACES
   - B. PREVENT BENDING OF THE HOSE TO A RADIUS OF LESS THAN 20 INCHES
   - C. PREVENT DAMAGE TO COUPLING HALF
7. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND1002223 AFTER PERFORMING LEAK CHECK
8. TORQUE ITEM ⑦ TO 12 ± 1 IN-LB

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1001489-17		SCREW, HEX SOC HD	7
1	1011599-16		PACKING, PREFORMED, RETAINED	6
1	1001471		HOSE ASSY FLEXIBLE	5
1	1000159-6		PACKING PREFORM	4
A/R		MIL-G-4343	LUBRICANT, DOW CORNING NO. 55	3
1	1000135		COUPLING HALF QUICK DISC	2
1	1021406		ADAPTER PLATE, COOL. HOSE BYP	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1019998	1015000

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN J. Falzone 23 DEC 64
CHECKED
APPROVED Sarhoff 6 Jan 65
APPROVED
APPROVED MIT W Kupfer 6 Jan 65
APPROVED MSC W J Rhine 1-6-65
DATE

ADAPTER PLATE ASSY
COOLANT HOSE BYPASS

CODE IDENT NO.
SIZE D
DRAWING NO. 1021407
SCALE 2/1
SHEET 1 OF 1

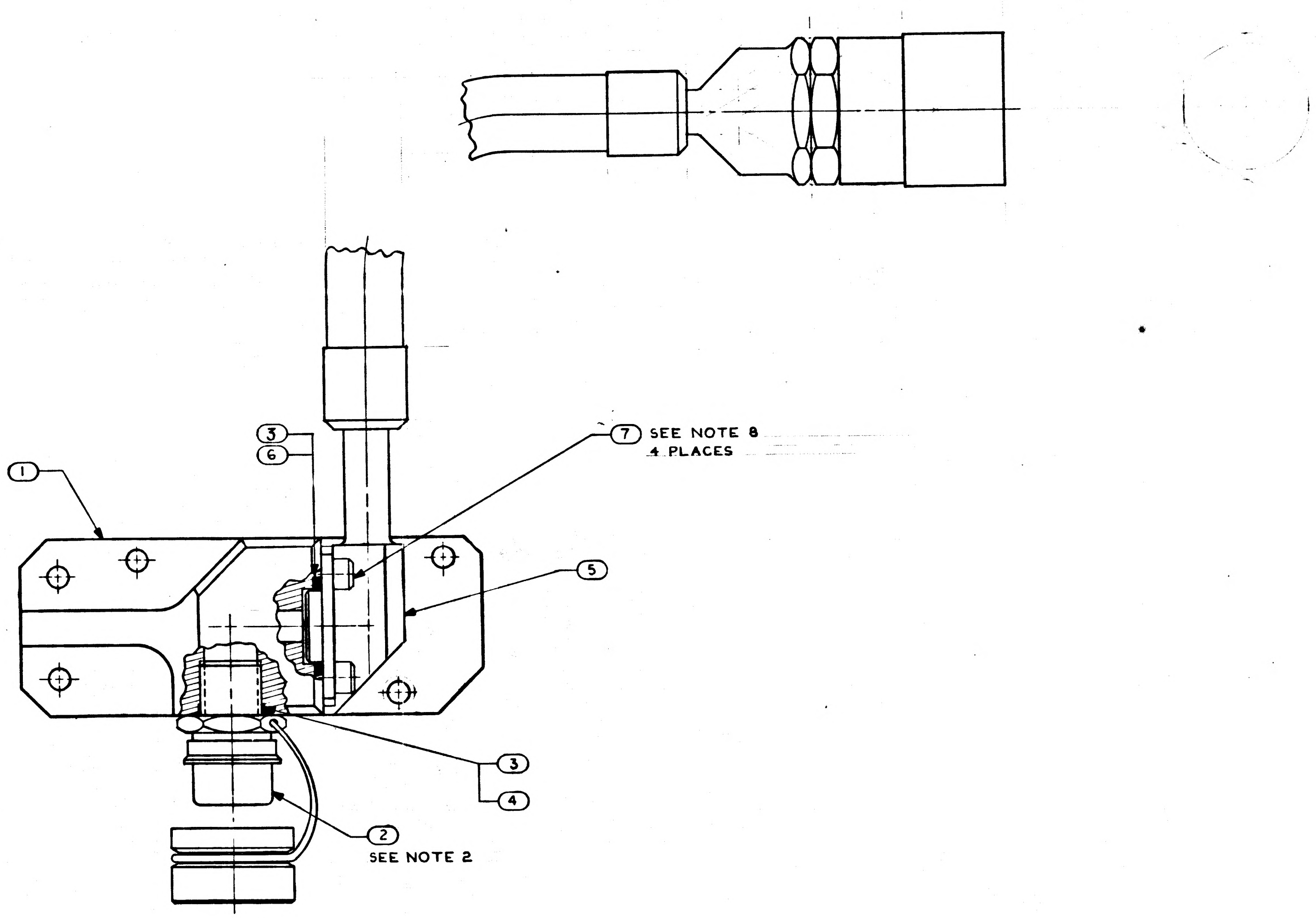
1021407 A

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 15343

(r)

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED	
A		REVISED TDRR 17164			8 Mar 65		WK
B		REVISED TDRR 20424	PAV		15 JULY 65		WK



NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
2. ASSEMBLE ITEM ② TO ITEM ① WITH 70 IN-LB ±7% TORQUE
3.
4. IDENTIFY USING DRAWING NO., REVISION LETTER AND MANUFACTURERS SYMBOL PER ND1002019
5. LEAK TEST: THE MAXIMUM LEAK RATE IS 5×10^{-6} STD CC/SEC OF HELIUM WHEN INTERNALLY PRESSURIZED TO 77.5 ± .5 PSIG
6. ASSEMBLY SHALL BE PACKED AND SHIPPED IN A MANNER THAT WILL:
   - A. PREVENT CONTAMINATION OF INTERNAL SURFACES
   - B. PREVENT BENDING OF THE HOSE TO A RADIUS OF LESS THAN 20 INCHES
   - C. PREVENT DAMAGE TO COUPLING HALF
7. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND1002223 AFTER PERFORMING LEAK CHECK
8. TORQUE ITEM ⑦ TO 12 ± 1 IN-LB

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1001489-16		SCREW, HEX SOC HD	7
1	1000159-7		PACKING, PREFORMED, O'RING	6
1	1001471		HOSE ASSY FLEXIBLE	5
1	1000159-6		PACKING PREFORM	4
A/R		MIL-G-4343	LUBRICANT, DOW CORNING NO. 55	3
1	1000135		COUPLING HALF QUICK DISC	2
1	1021406		ADAPTER PLATE, COOL. HOSE BYP	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1019998	1015000

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN J. Falzone 23 DEC 64
CHECKED
APPROVED 6 Jan 65
APPROVED
APPROVED MIT W Kupfer 6 Jan 65
APPROVED MSC W J Rhine 1-6-65
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

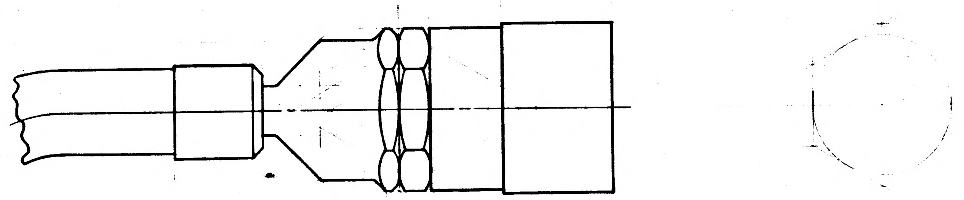
ADAPTER PLATE ASSY
COOLANT HOSE BYPASS

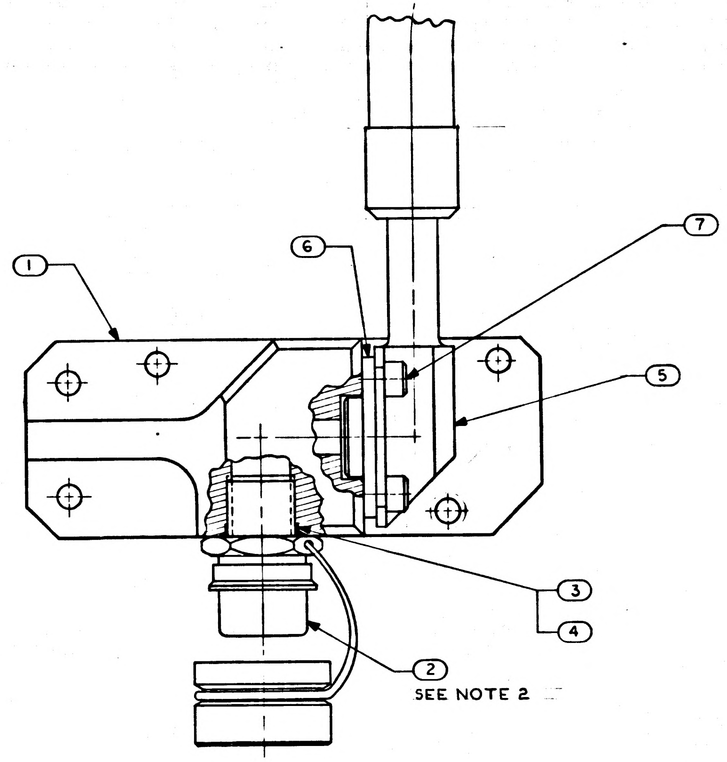
CODE IDENT NO.
SIZE D
DRAWING NO. 1021407
SCALE 2/1
SHEET 1 OF 1

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 15343

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED





NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
2. ASSEMBLE ITEM ② TO ITEM ① WITH 70 IN-LB ±7% TORQUE
3.
4. IDENTIFY USING DRAWING NO., REVISION LETTER AND MANUFACTURERS SYMBOL PER ND1002019
5. LEAK TEST: THE MAXIMUM LEAK RATE IS 5×10^{-6} STD CC/SEC OF HELIUM WHEN INTERNALLY PRESSURIZED TO 77.5 ± .5 PSIG
6. ASSEMBLY SHALL BE PACKED AND SHIPPED IN A MANNER THAT WILL:
   - A. PREVENT CONTAMINATION OF INTERNAL SURFACES
   - B. PREVENT BENDING OF THE HOSE TO A RADIUS OF LESS THAN 20 INCHES
   - C. PREVENT DAMAGE TO COUPLING HALF

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1001489-16		SCREW, HEX SOC HD	7
1	1011599-16		PACKING, PREFORMED, RETAINED	6
1	1001471		HOSE ASSY FLEXIBLE	5
1	1000159-6		PACKING PREFORM	4
A/R		MIL-G-4343	LUBRICANT, DOW CORNING NO. 55	3
1	1000135		COUPLING HALF QUICK DISC	2
1	1021406		ADAPTER PLATE, COOL. HOSE BYP	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1019998	1015000

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

		DATE
DRAWN	J. Falzone	23 DEC 64
CHECKED		
APPROVED		6 Jan 65
APPROVED		
APPROVED MIT	W Kupfer	6 Jan 65
APPROVED MSC	W J Rhine	1-6-65

ADAPTER PLATE ASSY
COOLANT HOSE BYPASS

CODE IDENT NO.
SIZE D
DRAWING NO. 1021407
SCALE 2/1
SHEET 1 OF 1

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 16319		

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS

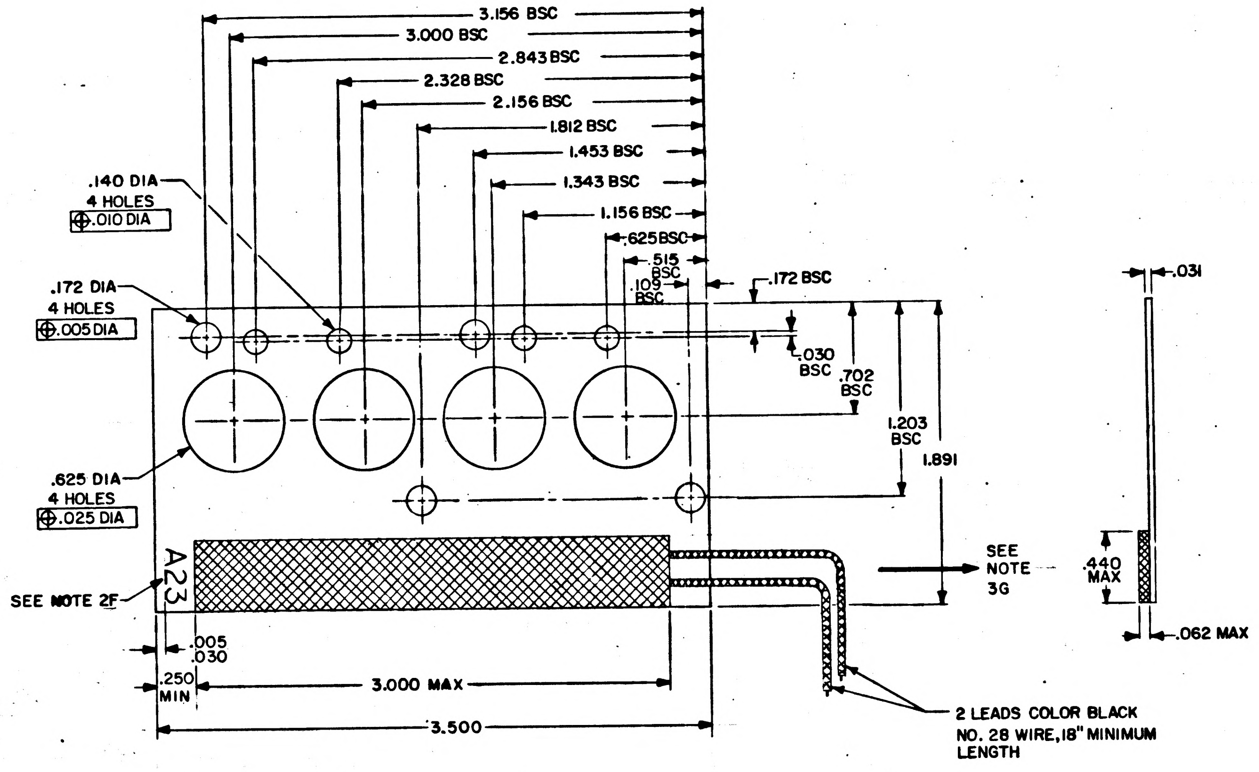
1. GENERAL:
   - A. INTERPRET DWG IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
   - B. IDENTIFY USING DWG. NO., REV. LETTER, SERIAL NO., & MANUFACTURERS SYMBOL PER ND 1002023
   - C. PACKAGE IN ACCORDANCE WITH ND 1002215, CLASS I
   - D. SUPPLIER OF HEATERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 2

2. INSPECTION & ACCEPTANCE:
   - A. HEATER SHALL HAVE THE FOLLOWING CHARACTERISTICS:

VOLTAGE (MAX OPERATING)	31 VDC
RESISTANCE (AT 130°F)	42Ω±3%
MIN. POWER RATING	23.6 WATTS

   - B. DIMENSIONS PER DRAWING
   - C. DIELECTRIC WITHSTANDING VOLTAGE: 500 VRMS, 60 CYCLES MEASURED BETWEEN HEATER (LEADS TIED TOGETHER) & THE PLATE PER MIL-STD-202, METHOD 301
   - D. INSULATION RESISTANCE: 1000 MEGOHMS MIN. AT 500 VDC MEASURED BETWEEN HEATER (LEADS TIED TOGETHER) & THE PLATE PER MIL-STD-202, METHOD 302
   - E. ALL EDGES AND CORNERS .005/.015 R OR CHFR
   - F. MARK CHARACTERS .115/.135 HIGH PER ND1002019

3. DESIGN REQUIREMENTS:
   - A. HEATER SHALL CONFORM TO APPLICABLE REQUIREMENTS OF ND 1002115
   - B. HEATER MUST BE CAPABLE OF WITHSTANDING 35 VDC TRANSIENT VOLTAGE OF 2 MINUTES DURATION AT CONTROL TEMPERATURE WITHOUT DEGRADATION
   - C. HEATER WIRES WILL BE NON-INDUCTIVELY WOUND
   - D. HEATER TO BE INTERWOVEN & EVENLY DISTRIBUTED OVER AREA SHOWN
   - E. HEATER TO BE WOUND WITH WIRE WITH TEMP COEFFICIENT OF .0001Ω/Ω/°F MAX
   - F. MATERIALS:
     - 1. ALUMINUM PLATE 6061-T6, QQ-A-250/11
     - 2. LEADS PER MIL-W-16878 TYPE E-28 (TFE) COLOR AS INDICATED
   - G. LEAD PULL: LEADS SHALL BE CAPABLE OF WITHSTANDING A 2 POUND PULL APPLIED GRADUALLY FOR 10 SECONDS IN DIRECTION INDICATED
   - H. FINISH: ANODIZE PER MIL-A-8625, TYPE I, CLEAR



PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±— DECIMALS ±.005 ANGLES ±—
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 3F
HEAT TREATMENT ——
FINAL FINISH SEE NOTE 3H

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN J C FUCHS DATE 2-1-65
CHECKED
APPROVAL 9 Feb 65
APPROVAL
NASA APPROVAL
MIT APPROVAL 9 Feb 65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATER PLATE, STABLE MEMBER

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE D NASA DRAWING NO. 1021408
SCALE 2/1 WT SHEET 1 OF 1

REVISIONS TDRR 16319			
SYM	DESCRIPTION	DATE	APPROVAL

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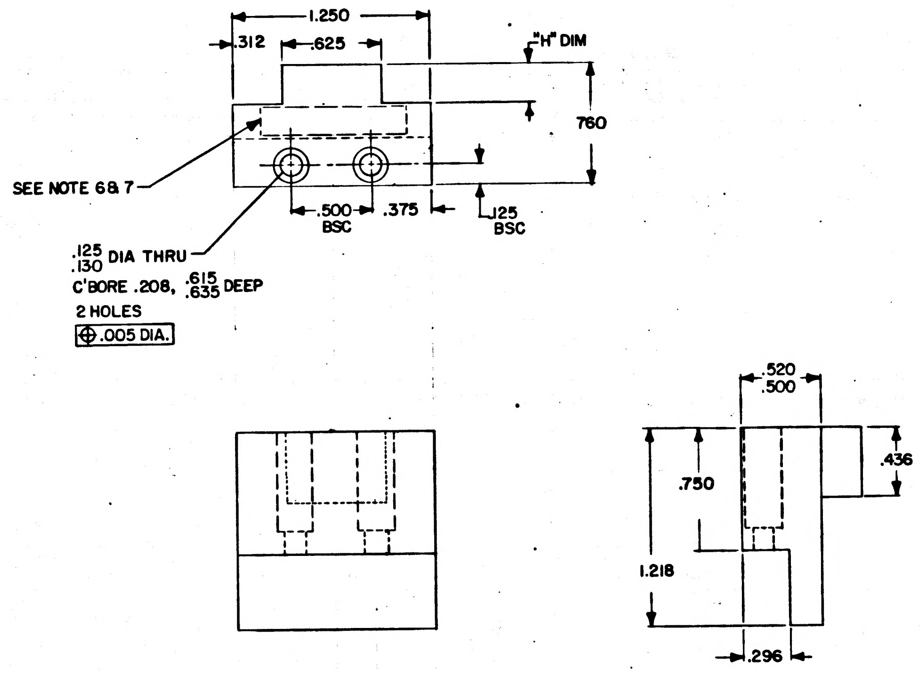
NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: COML MALLORY 3000 (OR EQUIVALENT)
   MALLORY METALLURGICAL CO.
   3029 EAST WASHINGTON ST.
   INDIANAPOLIS 6, INDIANA
3. FINISH: ZINC PLATE PER QQ-Z-325 TYPE II, CLASS 2
4. BREAK ALL SHARP EDGES .005/.015
5. 250✓ FINISH ALL OVER
6. WEIGHT SHALL BE MARKED ON EACH PIECE .10-.14 HIGH, COLOR BLACK PER ND 1002019, WEIGHT TO BE MEASURED TO NEAREST .01 OUNCE
7. IDENTIFY USING DRAWING NO., APPLICABLE DASH NO. & REVISION LETTER PER ND 1002019



PART NO	H DIM	WT. OZ. CALC. (REF.)
1021410-1	0	5.50
1021410-2	.125	5.84
1021410-3	.250	6.18

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN J C FUCHS DATE 2-9-65
CHECKED
APPROVAL
APPROVAL 9Feb65
NASA APPROVAL 2-9-65
MIT APPROVAL 9Feb65

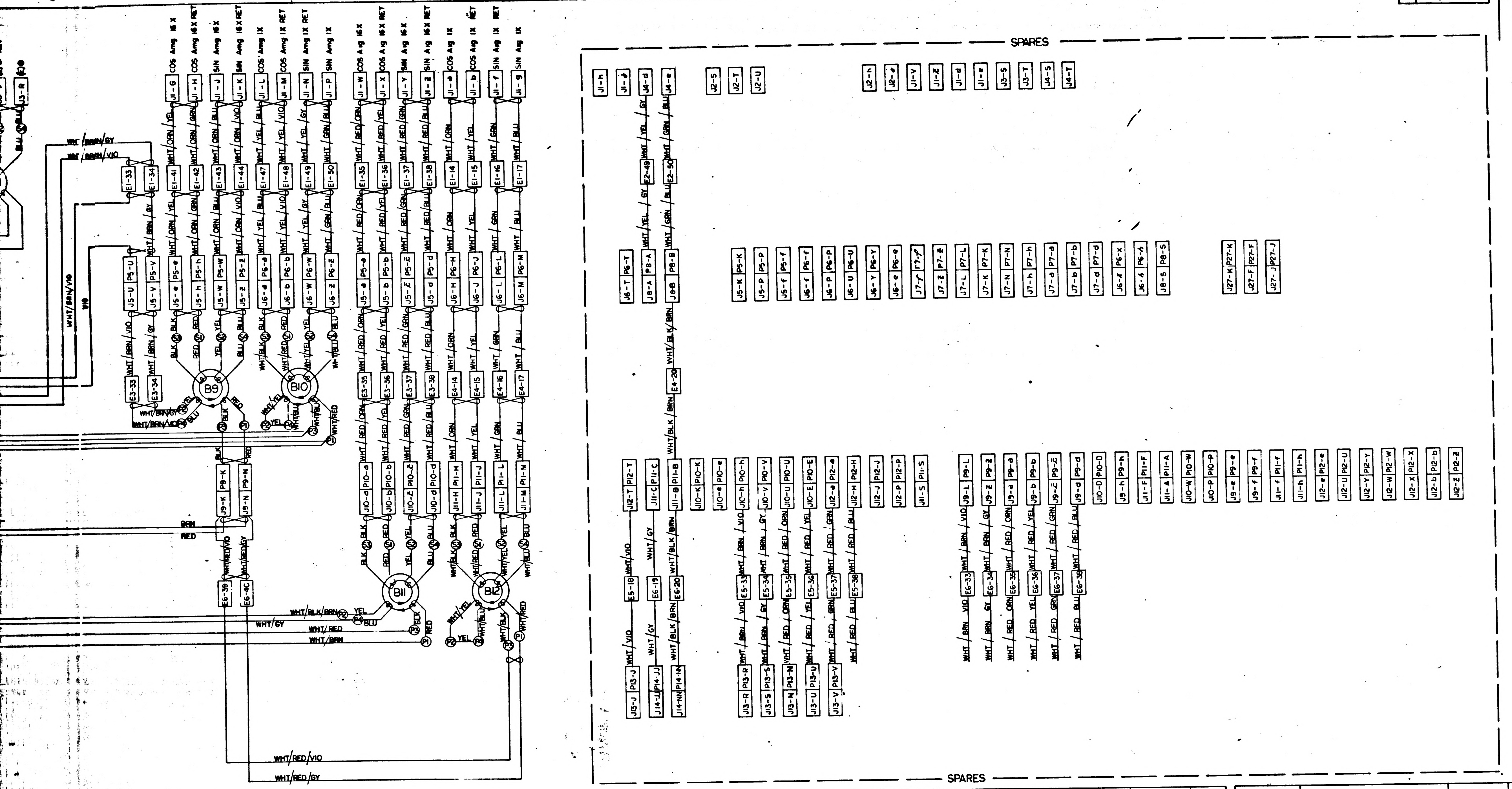
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WEIGHT BALANCE,
STABLE MEMBER

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1021410
SCALE 2/1
WT
SHEET 1 OF 1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

1021412



REFERENCE DESIGNATIONS	TITLE	.NASA PART NO.	REQD
A1 THRU A3	PIP	1000013	3
A4 THRU A6	ADA	1000097	3
A7, A10	ADA PREAMP	1007022	2
A8	ADA PREAMP	1007025	1
A9	IRIG PREAMP	1007031	1
A11	PRECISION RESOLVER ASSY	1007004	1
A12	EMERGENCY HEATER CONTROL	1007012	1
A13	28 VDC REGULATOR	1007013	1
A14 THRU A16	HTR & TAPERED MOUNT ASSY, 25 IRIG	1000126	3
A17 THRU A19	PIP PREAMP	1007015	3
A20	PRESSURE TRANSDUCER	1000272	1
A21, A22	BLOWER/SPEED CONTROL	1000288	2
A23	HEATER	1021408	1
A24	HEATER	1021409	1
B1 THRU B6	TORQUE MOTOR	1000075	6
B7	RESOLVER 16X	1000161	1
B8, B10, B12	RESOLVER 1X	1000030	3
B9, B11	RESOLVER 16X	1000162	2
B13	RESOLVER, PITCH-YAW.	1000031-8	1
B14	RESOLVER, GYRO ERROR	1000031-1	1
B15, B16	BLOWER	1000219	2
C1, C2	CAPACITOR	1010264-38	2
C3	CAPACITOR	1010279-245	1
E1, E2	SLIP RING	1000038	2
E3 THRU E6	SLIP RING	1000037	4
E11 THRU E22	TERMINAL, INSULATED	1000100-1	12
E7 THRU E10, E23 THRU E32 & E40 THRU E43	TERMINAL, LUG	1010717-1	29
E33 THRU E39	TIE POINT		7
F1, F2	FUSE	1000170-10	2

REFERENCE DESIGNATIONS	TITLE	NASA PART NO.	REQD
J1	CONNECTOR, PLUG	1001492-1	1
J2	PLUG	1001492-2	1
J3	PLUG	1001492-3	1
J4	PLUG	1000118-4	1
J5 THRU J12	PLUG	1000117	8
J13, J14	PLUG	1000120	2
J15 THRU J17	PLUG (CONTINENTAL P/N	MM26-22PGDS	3
J18 THRU J20	RECEPTACLE	1000122	3
J21	PLUG	1010472-1	1
J26, J27	PLUG	1000222	2
J28 THRU J30	CONNECTOR, PLUG	1010318-1	3
MP1, MP2, MP3	IRIG	1000012	3
P5 THRU P12	CONNECTOR, RECEPTACLE	1000116	8
P13 P14	RECEPTACLE	1000119	2
P15 THRU P17	RECEPTACLE	1000121	3
P18 THRU P20	PLUG	1000123	3
P21	RECEPTACLE	1010472-2	1
P26, P27	CONNECTOR RECEPTACLE	1000221	2
P28 THRU P30	CONNECTOR, RECEPTACLE	1010318-2	3
R1	RESISTOR, FIXED	1010498	1
R2			1
R3			1
R4		-300	1
R5, R6		1010325-500	2
S1	SWITCH, LIMIT	1000211	1
S2, S3	THERMOSTAT-SAFETY	1000266	2
			1
S4	THERMOSTAT-MERCURY	1000247	1
TB1	TERMINAL BOARD	1000253	1

REFERENCE DESIGNATIONS	TITLE	NASA PART NO.	REQD

DRAWING FOR REFERENCE:
1001500 IMU ASSEMBLY

1021412

E4

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1001500	DL1001500

APPLICATION

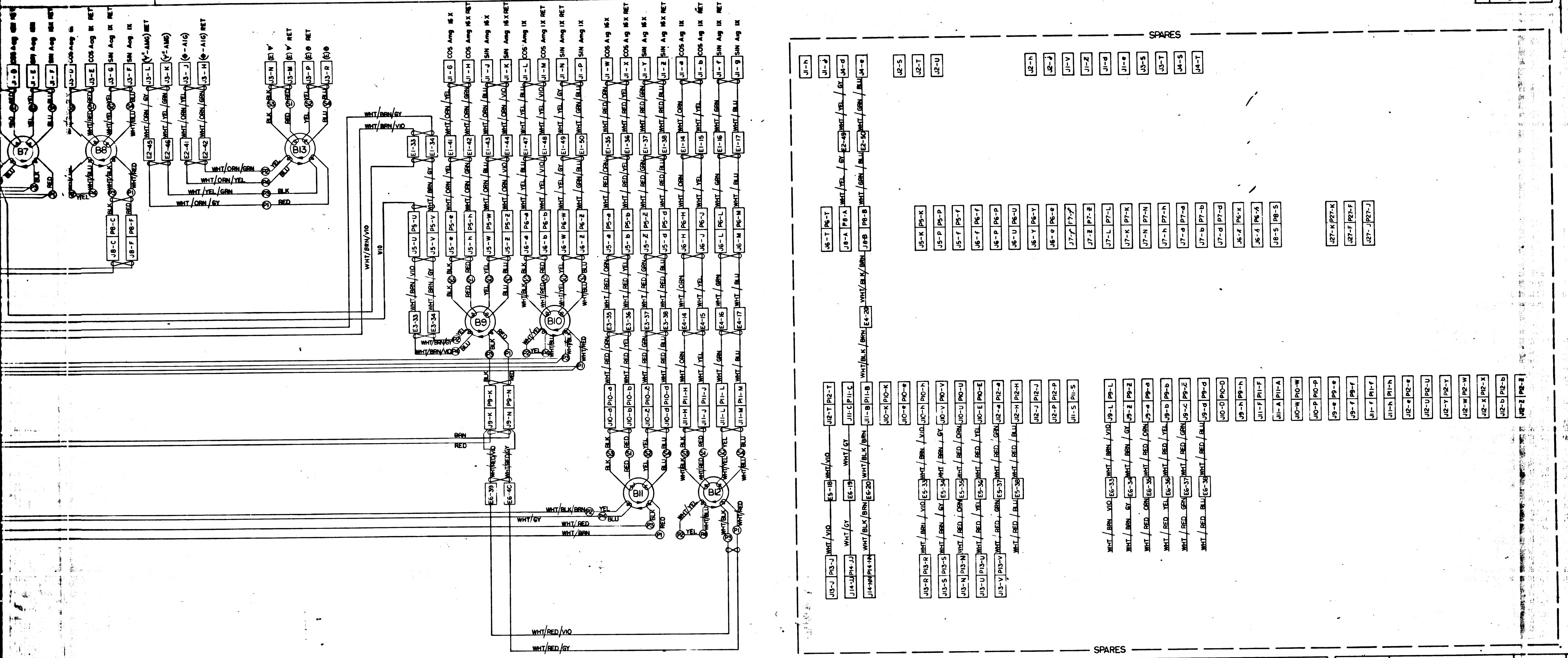
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN DATE 17 FEB 6
CHECKED J. Thompson
APPROVAL A.E.
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

IMU WIRING DIAGRAM

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1021412
SCALE —
WT
SHEET 1 OF 1


SPARES
B7
B8
B9
B10
B11
B12
B13
WHT/BRN/GY
WHT/BRN/VIO
WHT/ORN/GRN
WHT/ORN/YEL
WHT/YEL/GRN
WHT/ORN/GY
WHT/BRN/VIO
VIO
BRN
RED
WHT/BLK/BRN
WHT/GY
WHT/RED
WHT/BRN
WHT/RED/VIO
WHT/RED/GY
COS Ang 16X
COS Ang 16X RET
SIN Ang 16X
SIN Ang 16X RET
COS Ang 1X
COS Ang 1X RET
SIN Ang 1X
SIN Ang 1X RET
(E1) RET
(E1)
(E2) RET
(E2)

SPARES

REFERENCE DESIGNATIONS	TITLE	.NASA PART NO.	REQD
A1 THRU A3	PIP	1000013	3
A4 THRU A6	ADA	1000097	3
A7, A10	ADA PREAMP	1007022	2
A8	ADA PREAMP	1007025	1
A9	IRIG PREAMP	1007031	1
A11	PRECISION RESOLVER ASSY	1007004	1
A12	EMERGENCY HEATER CONTROL	1007012	1
A13	28 VDC REGULATOR	1007013	1
A14 THRU A16	HTR & TAPERED MOUNT ASSY, 25 IRIG	1000126	3
A17 THRU A19	PIP PREAMP	1007015	3
A20	PRESSURE TRANSDUCER	1000272	1
A21, A22	BLOWER/SPEED CONTROL	1000288	2
A23	HEATER	1021408	1
A24	HEATER	1021409	1
B1 THRU B6	TORQUE MOTOR	1000075	6
B7	RESOLVER 16X	1000161	1
B8, B10, B12	RESOLVER 1X	1000030	3
B9, B11	RESOLVER 16X	1000162	2
B13	RESOLVER, PITCH-YAW.	1000031-2	1
B14	RESOLVER, GYRO ERROR	1000031-1	1
B15, B16	BLOWER	1000219	2
C1, C2	CAPACITOR	1010264-38	2
C3	CAPACITOR	1010279-245	1
E1, E2	SLIP RING	1000038	2
E3 THRU E6	SLIP RING	1000037	4
E11 THRU E22	TERMINAL, INSULATED	1000100-1	12
E7 THRU E10, E23 THRU E32 & E40 THRU E43	TERMINAL, LUG	1010717-1	29
E33 THRU E39	TIE POINT		7
F1, F2	FUSE	1000170-10	2

REFERENCE DESIGNATIONS	TITLE	NASA PART NO.	REQD
J1	CONNECTOR, PLUG	1001492-1	1
J2	PLUG	1001492-2	1
J3	PLUG	1001492-3	1
J4	PLUG	1000118-4	1
J5 THRU J12	PLUG	1000117	8
J13, J14	PLUG	1000120	2
J15 THRU J17	PLUG (CONTINENTAL P/N	MM26-22PGDS	3
J18 THRU J20	RECEPTACLE	1000122	3
J21	PLUG	1010472-1	1
J26, J27	PLUG	1000222	2
J28 THRU J30	CONNECTOR, PLUG	1010318-1	3
MP1, MP2, MP3	IRIG	1000012	3
P5 THRU P12	CONNECTOR, RECEPTACLE	1000116	8
P13 P14	RECEPTACLE	1000119	2
P15 THRU P17	RECEPTACLE	1000121	3
P18 THRU P20	PLUG	1000123	3
P21	RECEPTACLE	1010472-2	1
P26, P27	CONNECTOR RECEPTACLE	1000221	2
P28 THRU P30	CONNECTOR, RECEPTACLE	1010318-2	3
R1	RESISTOR, FIXED	1010498	1
R2			1
R3			1
R4		-300	1
R5, R6		1010325-500	2
S1	SWITCH, LIMIT	1000211	1
S2, S3	THERMOSTAT-SAFETY	1000266	2
			1
S4	THERMOSTAT-MERCURY	1000247	1
TB1	TERMINAL BOARD	1000253	1

REFERENCE DESIGNATIONS	TITLE	NASA PART NO.	REQD

F3 1021412

MASTER

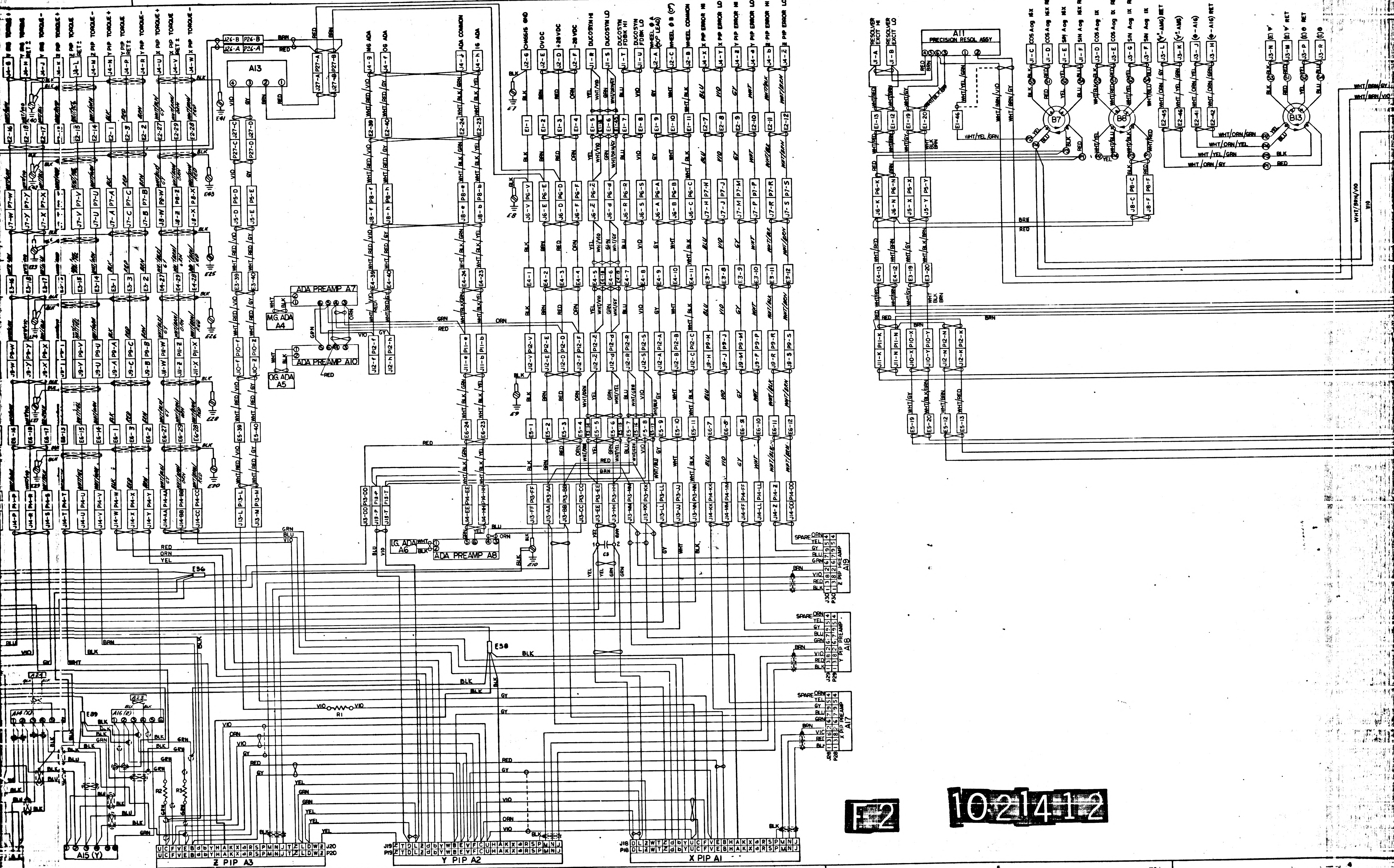
1001500	DL1001500
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

QTY REQD | PART OR IDENTIFYING NO.

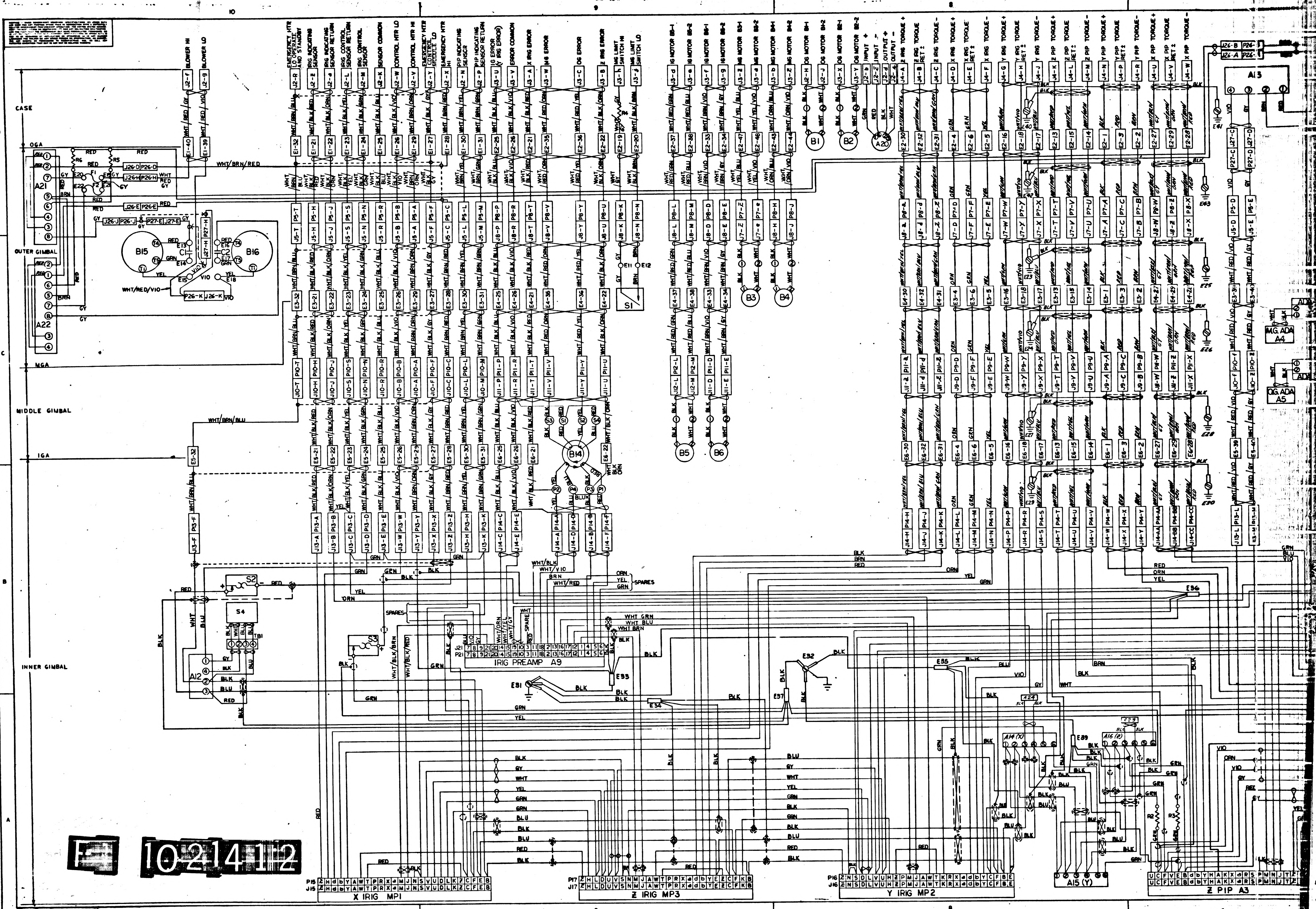
MIT
INSTRUMENTATION LAB

DRAWN
DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL


A13
A11
PRECISION RESOL ASSY
ADA PREAMP A7
I.M.G. ADA
A4
ADA PREAMP A10
O.G. ADA
A5
I.G. ADA
A6
ADA PREAMP A8
B7
B8
B13
CHASSIS GND
OVDC
+28 VDC
-28 VDC
DUCOSYN HI
DUCOSYN LO
DUCOSYN FDBK HI
DUCOSYN FDBK LO
WHEEL φA (90° LEAD)
WHEEL φB (0°)
WHEEL COMMON
X PIP ERROR HI
X PIP ERROR LO
Y PIP ERROR HI
Y PIP ERROR LO
Z PIP ERROR HI
Z PIP ERROR LO
IMG ADA
OG ADA
ADA COMMON
IG ADA
Y PIP TORQUE +
Y PIP RET ±
Z PIP TORQUE -
Z PIP TORQUE +
Z PIP RET ±
Y PIP TORQUE -
X PIP TORQUE +
X PIP RET ±
X PIP TORQUE -
RESOLVER EXCIT HI
RESOLVER EXCIT LO
COS Ang 16X
COS Ang 16X RET
SIN Ang 16X
SIN Ang 16X RET
COS Ang 1X
COS Ang 1X RET
SIN Ang 1X
SIN Ang 1X RET
(Ψ+AMB) RET
(Ψ+AMB)
(Φ-A16)
(Φ-A16) RET
(E) Ψ
(E) Ψ RET
(E) Φ RET
(E) Φ
E8
E9
E10
E25
E26
E28
E30
E36
E38
E39
E41
E43
R1
R2
R3
C3
A14 (X)
A15 (Y)
A16 (Z)
A23
A24
SPARE
Z PIP PREAMP A19
J30 P30
Y PIP PREAMP A18
J29 P29
X PIP PREAMP A17
J28 P28
Z PIP A3
J20 P20
Y PIP A2
J19 P19
X PIP A1
J18 P18
BLK
BRN
RED
ORN
YEL
GRN
BLU
VIO
GY
WHT

F2

1021412


10
9
8
D
C
B
A
CASE
OGA
OUTER GIMBAL
MGA
MIDDLE GIMBAL
IGA
INNER GIMBAL
BLOWER HI
BLOWER LO
EMERGENCY HTR LO OPERATE AND STANDBY
IRIG INDICATING SENSOR
IRIG INDICATING SENSOR RETURN
IRIG CONTROL SENSOR RETURN
IRIG CONTROL SENSOR
SENSOR COMMON
CONTROL HTR LO
CONTROL HTR HI
EMERGENCY HTR CONTROL
EMERGENCY HTR HI
PIP INDICATING SENSOR
PIP INDICATING SENSOR RETURN
IG ERROR (Y IRIG ERROR)
ERROR COMMON
X IRIG ERROR
MG ERROR
OG ERROR
Z IRIG ERROR
MG LIMIT SWITCH HI
MG LIMIT SWITCH LO
IG MOTOR
MG MOTOR
OG MOTOR
INPUT +
INPUT −
OUTPUT +
OUTPUT −
X IRIG TORQUE +
X IRIG TORQUE RET 2
Z IRIG TORQUE −
Y IRIG TORQUE +
Y IRIG TORQUE RET 2
Y IRIG TORQUE −
Z PIP TORQUE +
Z PIP TORQUE RET 2
Y PIP TORQUE +
Y PIP TORQUE RET 2
Y PIP TORQUE −
X PIP TORQUE +
X PIP TORQUE RET 2
X PIP TORQUE −
A13
A21
A22
A20
B1
B2
B3
B4
B5
B6
B14
B15
B16
S1
S2
S3
S4
A12
TB1
IRIG PREAMP A9
J21
P21
E31
E32
E33
E34
E35
E36
E37
E39
A14 (X)
A16 (Z)
A15 (Y)
R2
R3
I.M.G. ADA A4
O.G. ADA A5
SPARES
WHT/BRN/RED
WHT/BRN/BLU
WHT/RED/VIO
P15
J15
X IRIG MP1
P17
J17
Z IRIG MP3
P16
J16
Y IRIG MP2
Z PIP A3

F 10214112

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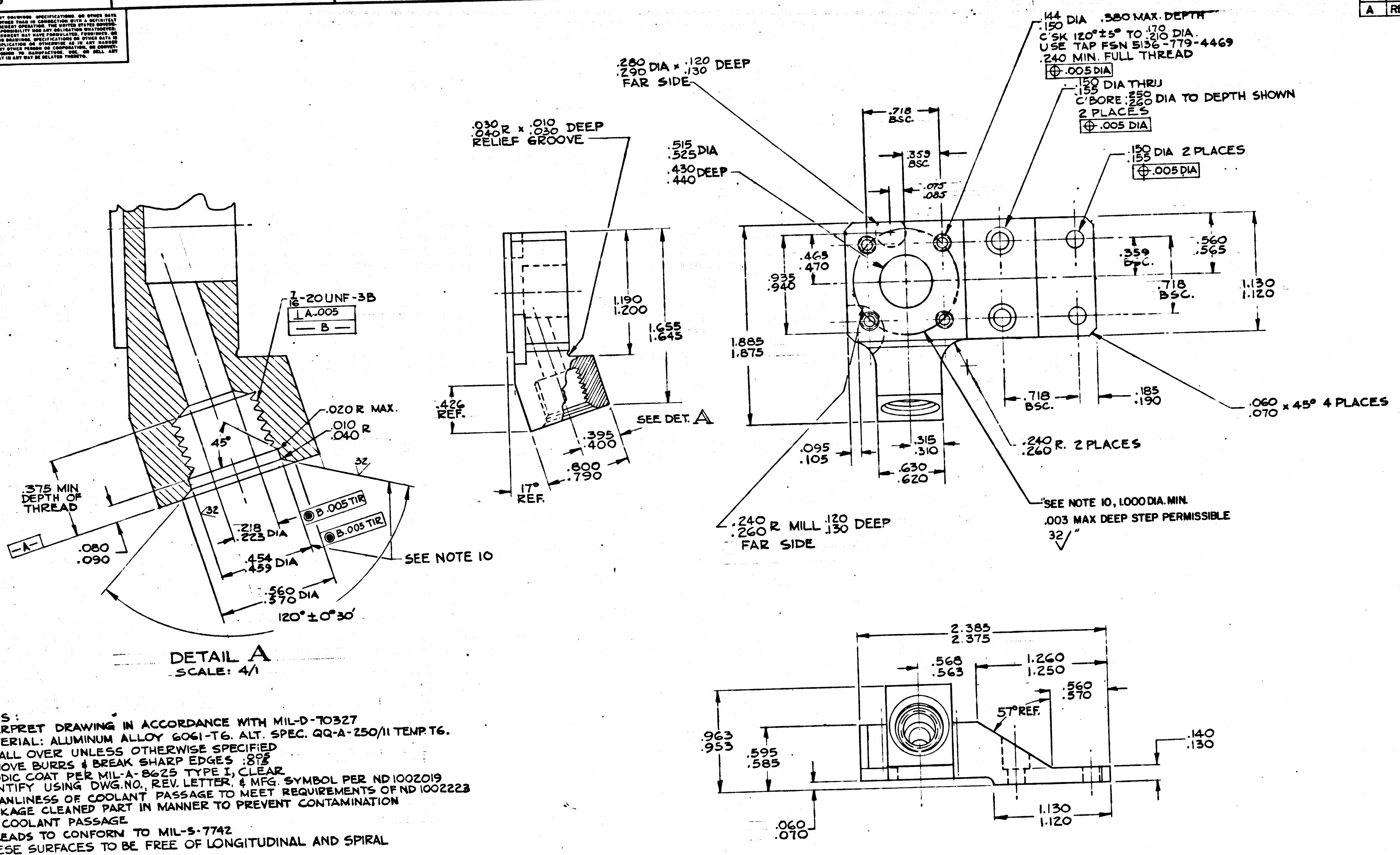
REVISIONS TDRR 17163

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED TDRR 18080	12Apr65	WK



.280/.290 DIA × .120/.130 DEEP FAR SIDE
.030/.040 R × .010/.030 DEEP RELIEF GROOVE
.515/.525 DIA
.430/.440 DEEP
.144/.150 DIA .380 MAX. DEPTH
C'SK 120°±5° TO .170/.210 DIA.
USE TAP FSN 5136-779-4469
.240 MIN. FULL THREAD
⊕ .005 DIA
.150/.155 DIA THRU
C'BORE .250/.260 DIA TO DEPTH SHOWN
2 PLACES
⊕ .005 DIA
.150/.155 DIA 2 PLACES
⊕ .005 DIA
.718 BSC.
.359 BSC
.075/.085
.465/.470
.935/.940
.359 BSC.
.718 BSC.
.560/.565
1.130/1.120
1.885/1.875
.718 BSC.
.185/.190
.060/.070 × 45° 4 PLACES
.095/.105
.315/.310
.630/.620
.240/.260 R. 2 PLACES
SEE NOTE 10, 1.000 DIA. MIN.
.003 MAX DEEP STEP PERMISSIBLE
32
.240/.260 R MILL .120/.130 DEEP FAR SIDE
1.190/1.200
1.655/1.645
.426 REF.
SEE DET. A
.395/.400
.800/.790
17° REF.
7/16-20UNF-3B
⊥ A .005
— B —
.020 R MAX.
.010/.040 R
45°
32
.375 MIN DEPTH OF THREAD
— A —
.080/.090
32
.218/.223 DIA
◉ B .005 TIR
◉ B .005 TIR
.454/.459 DIA
SEE NOTE 10
.560/.570 DIA
120° ± 0°30'
2.385/2.375
.568/.563
1.260/1.250
.560/.570
57° REF.
.963/.953
.595/.585
.140/.130
.060/.070
1.130/1.120

DETAIL A
SCALE: 4/1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
2. MATERIAL: ALUMINUM ALLOY 6061-T6. ALT. SPEC. QQ-A-250/11 TEMP. T6.
3. 125√ ALL OVER UNLESS OTHERWISE SPECIFIED
4. REMOVE BURRS & BREAK SHARP EDGES .005/.015
5. ANODIC COAT PER MIL-A-8625 TYPE I, CLEAR
6. IDENTIFY USING DWG. NO., REV. LETTER, & MFG. SYMBOL PER ND 1002019
7. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND 1002223
8. PACKAGE CLEANED PART IN MANNER TO PREVENT CONTAMINATION OF COOLANT PASSAGE
9. THREADS TO CONFORM TO MIL-S-7742
10. THESE SURFACES TO BE FREE OF LONGITUDINAL AND SPIRAL TOOL MARKS.

MASTER

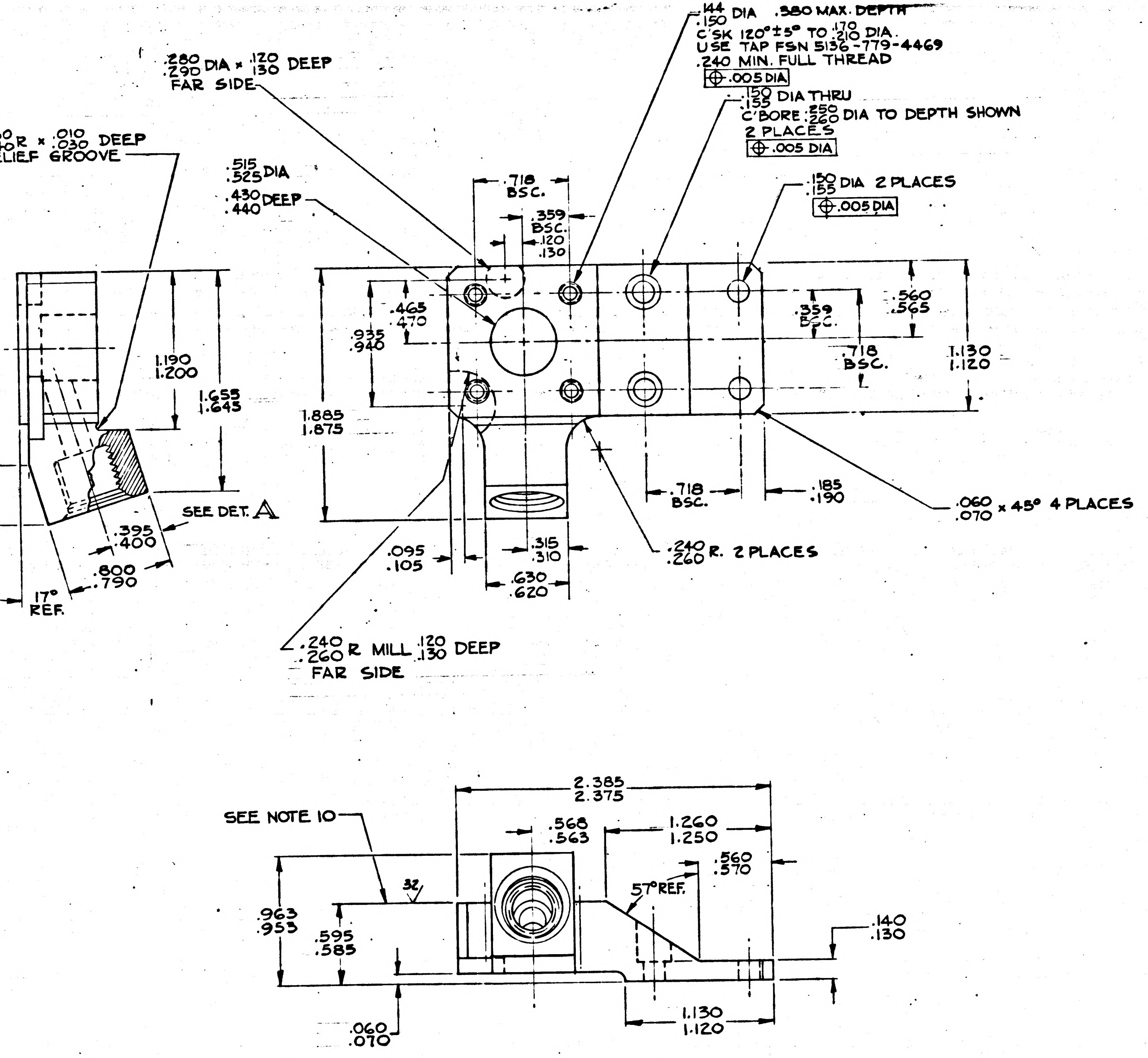
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

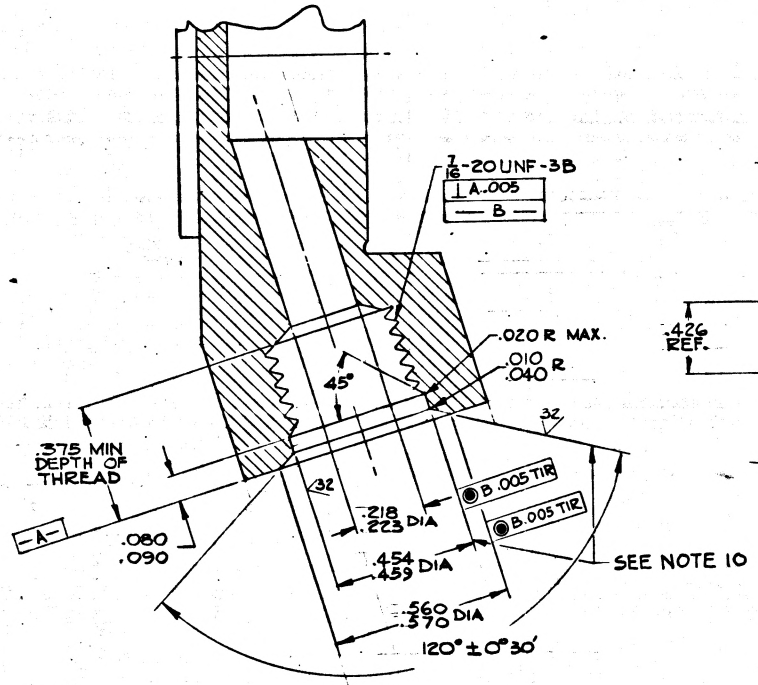
LIST OF MATERIALS

1021414	1899950	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± 1° DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWG. NO. CONTRACT DRAWN A.T.P. DATE 3/5/65 CHECKED APPROVAL 8Mar65 APPROVAL	MANNED SPACECRAFT CENTER HOUSTON, TEXAS ADAPTER PLATE, COOLANT HOSE BYPASS
NEXT ASSY	USED ON	MATERIAL SEE NOTE 2	NASA APPROVAL W.J. 3-8-65	CODE IDENT NO. 80230
APPLICATION		HEAT TREATMENT	MIT APPROVAL 9Mar65	SIZE D
		FINAL FINISH SEE NOTE 5		NASA DRAWING NO. 1021413
				SCALE 2/1 WT SHEET OF

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 17163			
SYM	DESCRIPTION	DATE	APPROVAL


.280 / .290 DIA × .120 / .130 DEEP FAR SIDE
.030 / .040 R × .010 / .030 DEEP RELIEF GROOVE
.515 / .525 DIA
.430 / .440 DEEP
.144 / .150 DIA .380 MAX. DEPTH
C'SK 120° ± 5° TO .170 / .210 DIA.
USE TAP FSN 5136-779-4469
.240 MIN. FULL THREAD
⊕ .005 DIA
.150 / .155 DIA THRU
C'BORE .250 / .260 DIA TO DEPTH SHOWN
2 PLACES
⊕ .005 DIA
.150 / .155 DIA 2 PLACES
⊕ .005 DIA
.718 BSC.
.359 BSC.
.120 / .130
.465 / .470
.935 / .940
1.885 / 1.875
.359 BSC.
.560 / .565
.718 BSC.
1.130 / 1.120
1.190 / 1.200
1.655 / 1.645
.426 REF.
SEE DET. A
.395 / .400
.800 / .790
17° REF.
.718 BSC.
.185 / .190
.060 / .070 × 45° 4 PLACES
.240 / .260 R. 2 PLACES
.095 / .105
.315 / .310
.630 / .620
.240 / .260 R MILL .120 / .130 DEEP FAR SIDE
2.385 / 2.375
SEE NOTE 10
.568 / .563
1.260 / 1.250
.560 / .570
57° REF.
32
.963 / .953
.595 / .585
.140 / .130
1.130 / 1.120
.060 / .070


7/16-20 UNF-3B
⊥ A .005
— B —
.020 R MAX.
.010 / .040 R
45°
32
.375 MIN DEPTH OF THREAD
— A —
.080 / .090
32
.218 / .223 DIA
◎ B .005 TIR
◎ B .005 TIR
.454 / .459 DIA
SEE NOTE 10
.560 / .570 DIA
120° ± 0°30'

DETAIL A
SCALE: 4/1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
2. MATERIAL: ALUMINUM ALLOY 6061-T6. ALT. SPEC. QQ-A-250/11 TEMP. T6.
3. 125√ ALL OVER UNLESS OTHERWISE SPECIFIED
4. REMOVE BURRS & BREAK SHARP EDGES .005 / .015
5. ANODIC COAT PER MIL-A-8625 TYPE I, CLEAR
6. IDENTIFY USING DWG. NO., REV. LETTER, & MFG. SYMBOL PER ND 1002019
7. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND 1002223
8. PACKAGE CLEANED PART IN MANNER TO PREVENT CONTAMINATION OF COOLANT PASSAGE
9. THREADS TO CONFORM TO MIL-S-7742
10. THESE SURFACES TO BE FREE OF LONGITUDINAL AND SPIRAL TOOL MARKS.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1021414	1899950
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 5

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN A.T.P. DATE 3/5/65
CHECKED
APPROVAL 8 Mar 65
APPROVAL
NASA APPROVAL 3-8-65
MIT APPROVAL 9 Mar 65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

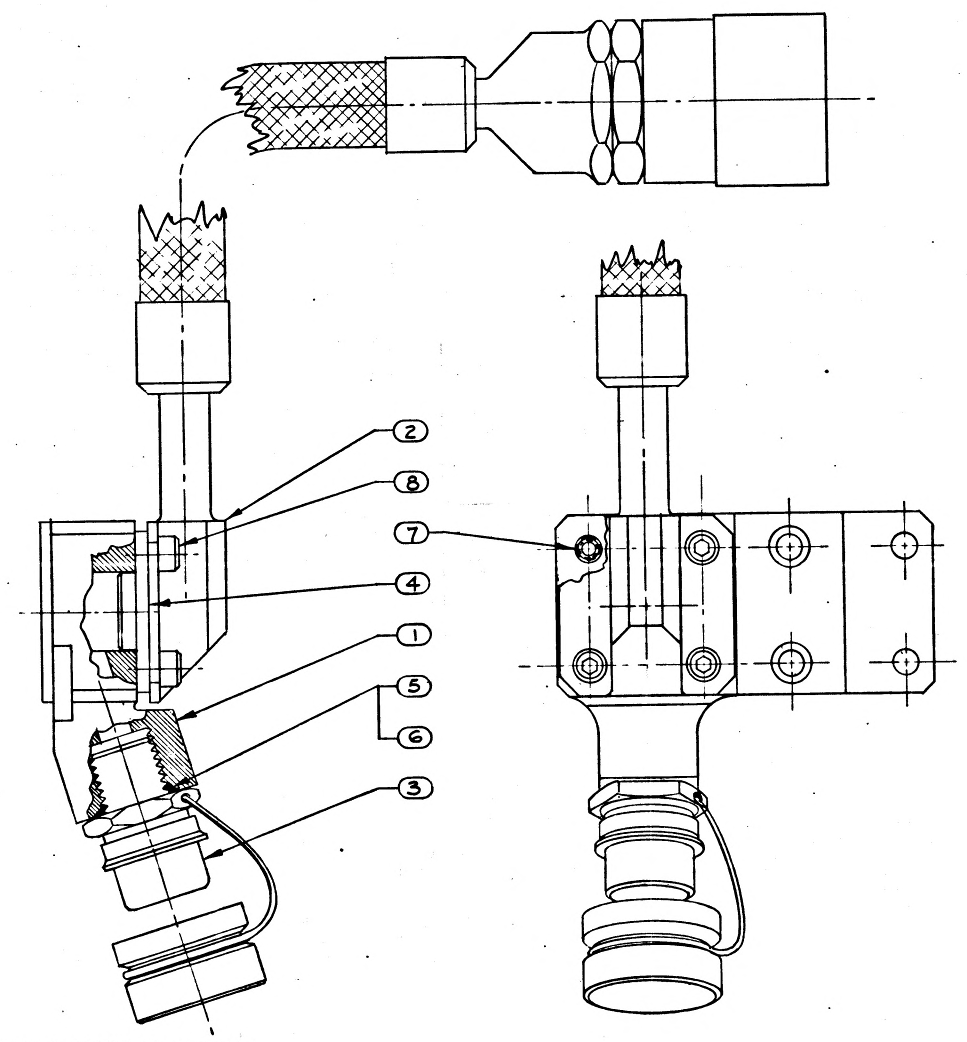
ADAPTER PLATE,
COOLANT HOSE BYPASS

CODE IDENT NO. SIZE D NASA DRAWING NO. 1021413
SCALE 2/1 WT SHEET OF

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 17688

SYM	DESCRIPTION	DATE	APPROVAL



NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
2. INSTALL ITEM ⑦ IN ITEM ① PER MS33646
3. ASSEMBLE ITEM ③ TO ITEM ① WITH 70 IN-LB ±7% TORQUE
4. TORQUE REQUIREMENT FOR ITEM ⑧ 10 IN-LB ±7%
5. IDENTIFY USING DWG. NO., REV. LETTER & MFG'S SYMBOL PER ND 1002019
6. LEAK TEST: MAX. LEAK RATE IS 5×10^{-6} STD CC/SEC. OF HELIUM WHEN INTERNALLY PRESSURIZED TO 77.5±.5 PSIG
7. ASSEMBLY SHALL BE PACKED & SHIPPED IN A MANNER THAT WILL PREVENT :
   - A. CONTAMINATION OF INTERNAL SURFACES.
   - B. BENDING OF HOSE TO RAD. OF LESS THAN 20 IN.
   - C. DAMAGE TO COUPLING HALF.
8. CLEANLINESS OF COOLANT PASSAGE TO MEET REQUIREMENTS OF ND 1002223

MASTER

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1001489-16	SCREW, HEX SOC HD	8
4	MS21209-C0615	INSERT, SCREW THREAD	7
A/R	MIL-G-4343	LUBRICANT, DOW CORNING NO. 55	6
1	1000159-6	PACKING, PREFORM	5
1	1011599-16	PACKING, PREFORMED, RETAINED	4
1	1000135	COUPLING HALF QUICK DISCON.	3
1	1001471	HOSE ASSY, FLEXIBLE	2
1	1021413	ADAPTER PLATE, COOLANT HOSE BYP.	1

NEXT ASSY	USED ON
1899950	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN A.T.P. DATE 3/10/65
CHECKED
APPROVAL [illegible] 10 Mar 65
APPROVAL
NASA APPROVAL W. J. R[illegible] 3-19-65
MIT APPROVAL [illegible]

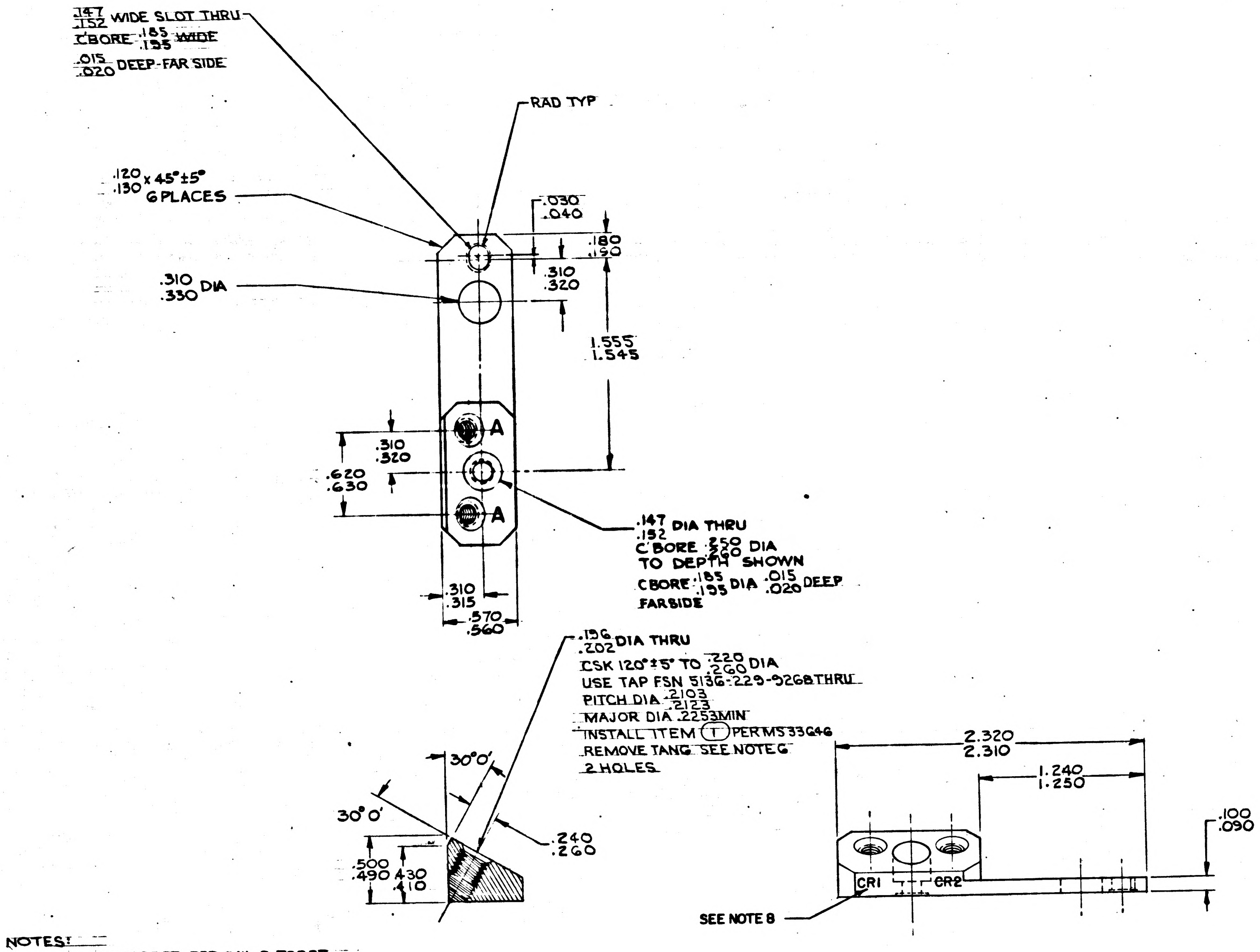
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADAPTER PLATE ASSY
COOLANT HOSE BYPASS

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1021414
SCALE 2/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 18321			
SYM	DESCRIPTION	DATE	APPROVAL


.147 .152 WIDE SLOT THRU
CBORE .185 .195 ~~WIDE~~
.015 .020 DEEP-FAR SIDE
RAD TYP
.120 .130 x 45°±5° 6 PLACES
.310 .330 DIA
.030 .040
.180 .190
.310 .320
1.555 1.545
A
A
.310 .320
.620 .630
.147 .152 DIA THRU
C'BORE .250 .260 DIA
TO DEPTH SHOWN
CBORE .185 .195 DIA .015 .020 DEEP
FARSIDE
.310 .315
.570 .560
.196 .202 DIA THRU
CSK 120°±5° TO .220 .260 DIA
USE TAP FSN 5136-229-9268 THRU
PITCH DIA .2103 .2123
MAJOR DIA .2253 MIN
INSTALL ITEM ① PER MS 33646
REMOVE TANG SEE NOTE 6
2 HOLES
30°0'
30°0'
.240 .260
.500 .490
.430 .410
2.320 2.310
1.240 1.250
.100 .090
CR1
CR2
SEE NOTE 8

NOTES:

1. INTERPRET PER MIL-D-70327
2. BREAK SHARP EDGES .005/.015
3. 63√ FINISH ALL OVER
4. INSIDE CORNERS .010 R MAX
5. MATERIAL: ALUMINUM ALLOY 6061-T6 PER QQ-A-250/11 TEMP T6
6. ORDER OF OPERATIONS:
    - A. FINISH MACHINE EXCEPT TAPPED HOLES MARKED "A"
    - B. ANODIC COAT PER MIL-A-8625 TYPE I CLEAR
    - C. DRILL AND TAP HOLES MARKED "A"
    - D. INSTALL ITEM ①
7. IDENTIFY USING DRAWING NO. AND REVISION PER ND1002019
8. MARK .060/.100 HIGH BLACK CHARACTERS PER ND1002019. CENTRALIZE AS SHOWN

MASTER

2	1010957-002	INSERT, SCREW THREAD	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1000205	DL1001500
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 5
HEAT TREATMENT
FINAL FINISH

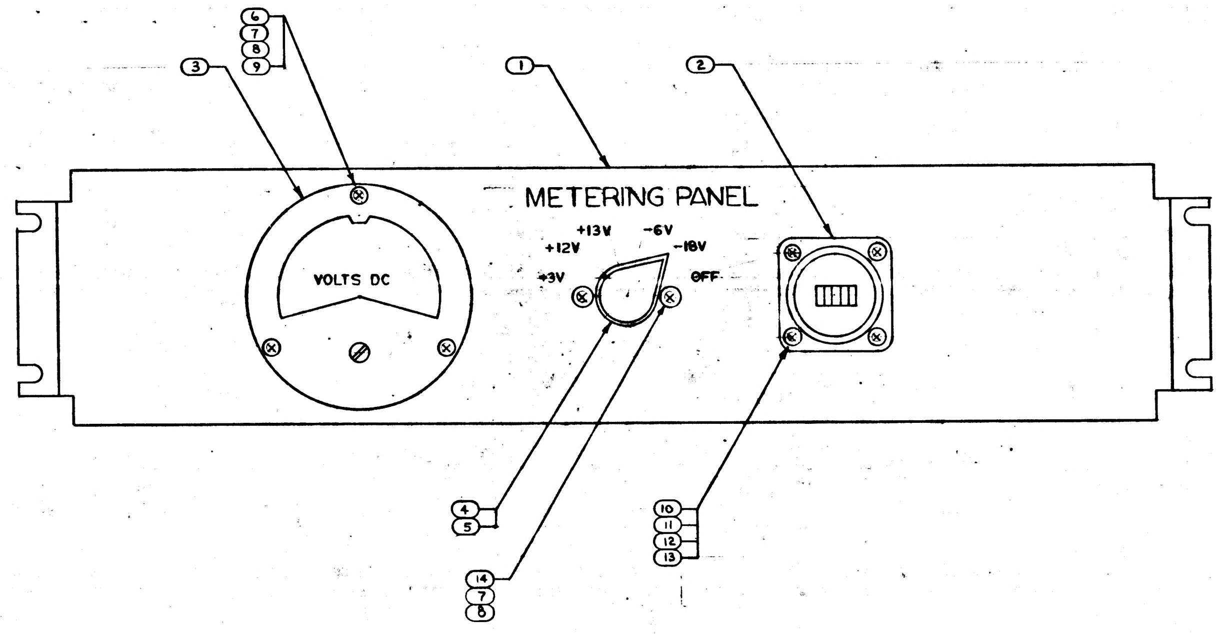
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN A.T.P. DATE 3/18/65
CHECKED
APPROVAL 12 Apr 65
APPROVAL
NASA APPROVAL 4-13-65
MIT APPROVAL 13 Apr 65

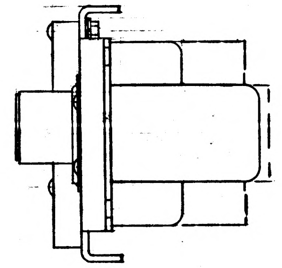
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MOUNT, DIODE

CODE IDENT NO. 80230
SIZE D
NASA DRAWING NO. 1021415
SCALE 2/1
WT
SHEET 1 OF 1

ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL





FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 18400 DATE 9/21/65

MASTER

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
2	SCREW, PAN HEAD, CROSS RECESS	MS35216-26			14
4	NUT, PLAIN HEX	MS35649-44			13
4	WASHER, LOCK, SPLIT	MS35338-78			12
4	WASHER, FLAT	MS15795-504			11
4	SCREW, PAN HEAD, CROSS RECESS	MS35216-15			10
3	NUT, PLAIN, HEX	MS35649-64			9
5	WASHER, LOCK, SPLIT	MS35338-79			8
5	WASHER, FLAT	MS15795-305			7
3	SCREW, PAN HEAD, CROSS RECESS	MS35216-30			6
1	KNOB	MS91528-2K2B			5
1	SWITCH, ROTARY	311-CB-6A		DAVEN	4
1	VOLTMETER, D.C	1006889			3
1	INDICATOR, TOTAL TIME	1006927			2
1	PANEL DETAIL	1021500			1

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1015472	AGC/STU

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES

DO NOT SCALE THIS DRAWING

MATERIAL:

MIT
INSTRUMENTATION LAB
CONTRACT
NAS 9-153

		DATE
APPROVED		
CHECKED		
DRAWN	R. APPLE	4-27-6

APPROVED FOR MSC
4-21-65
BY DIRECTION

METERING PANEL ASSEMBLY

SCALE	UNIT WT.	CODE IDENT.
1/1		

MIT
INSTRUMENTATION
LABORATORY
CAMBRIDGE, MASS.

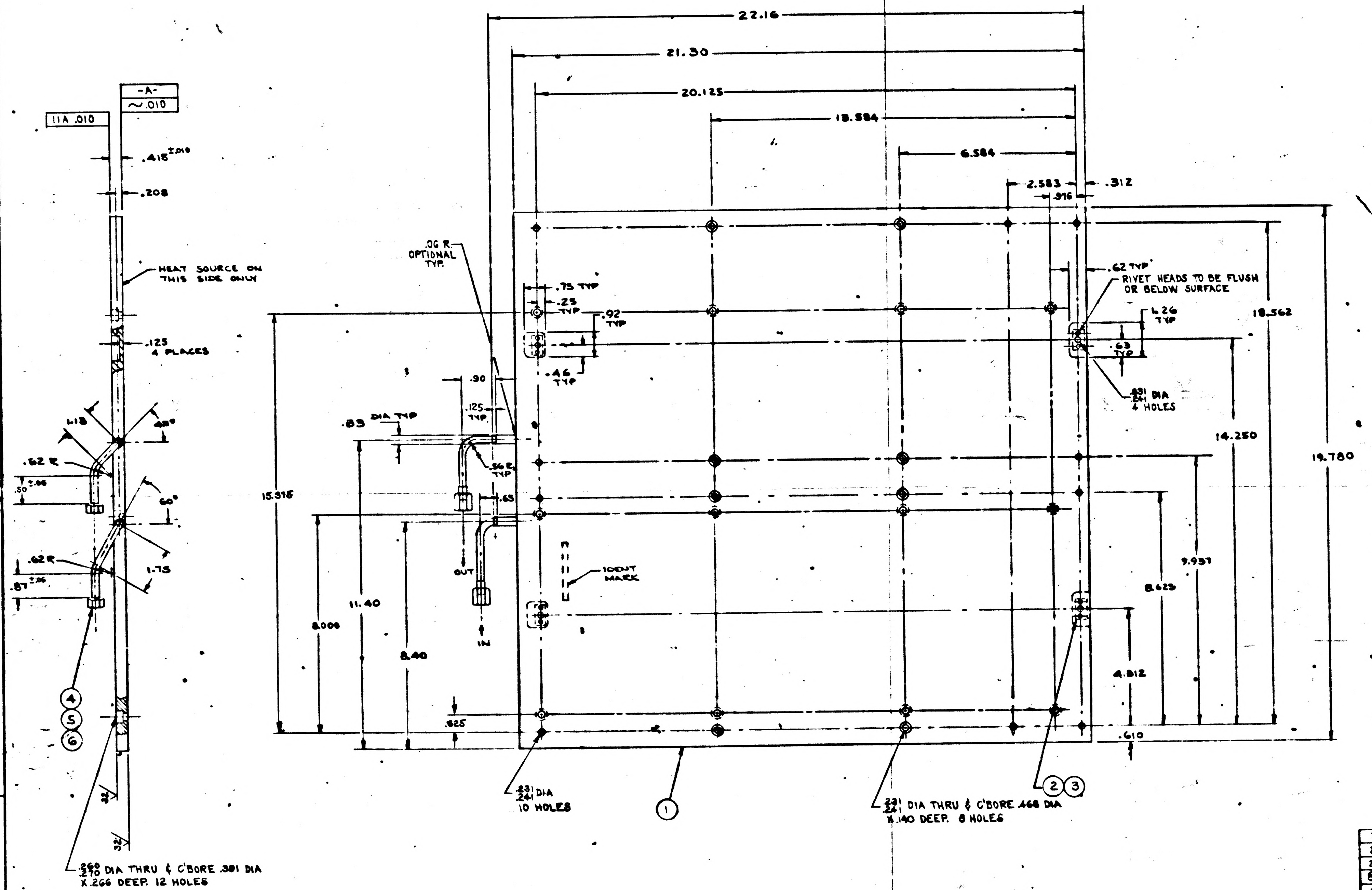
DWG. NO.

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

NASA DRAWING NO.
1021502

SHEET 1 OF 1

ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	—	CL B RELEASED PER TDRR 10981	7-14-64	
	A	CHANGE PER TDRR 12244 DR [illegible] CHK [illegible] APPD [illegible]	11 SEP 64	[illegible]



22.16
21.30
20.125
18.584
6.584
2.583
.916
.312
11A .010
-A-
~.010
.415 ±.010
.208
HEAT SOURCE ON THIS SIDE ONLY
.125 4 PLACES
1.18
48°
.62 R
.50
.62 R
.87
60°
1.75
.06 R OPTIONAL TYP.
.75 TYP
.25 TYP
.92 TYP
.46 TYP
.90
.125 TYP.
.83 DIA TYP
.56 R TYP
.65
OUT
IN
IDENT MARK
15.375
11.40
8.005
8.40
.625
.62 TYP
RIVET HEADS TO BE FLUSH OR BELOW SURFACE
1.26 TYP
.63 TYP
.231 .241 DIA 4 HOLES
18.562
14.250
19.780
9.937
8.625
4.812
.610
.231 .241 DIA 10 HOLES
.231 .241 DIA THRU & C'BORE .468 DIA X .140 DEEP. 8 HOLES
.260 .270 DIA THRU & C'BORE .381 DIA X .266 DEEP. 12 HOLES
1
2
3
4
5
6

NOTES:

1. GENERAL:
   - A. INTERPRET DWG IN ACCORDANCE WITH MIL-D-70327
   - B. MARKING: UNIT TO BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE NASA DWG NO. & REV LETTER. STENCIL .12 HIGH BLACK CHARACTERS & .03 WIDE LINES PER ND1002019
     PACKAGING SHALL BE IN ACCORDANCE WITH MIL-STD-129 WITH MFR NAME AND/OR SYMBOL, LOT OR SERIAL NO., DATE OF MFR OR CODING, NASA DWG NO. & REV. LETTER PER ND1002023.
2. FINISH: CHEMICAL FILM IN ACCORDANCE WITH MIL-C-5541.
3. MATERIAL OF THE COLD PLATE SHALL BE COMPATIBLE WITH A LIQUID COOLANT OF THE FOLLOWING COMPOSITION

PARTS BY WEIGHT	COMPONENT
62.500	ETHLYENE GLYCOL PER MIL-E-[illegible]
37.422	TRIPLE DISTILLED WATER
1.563	TRIETHANOLAMINEPHOSPHATE
.156	SODIUMMERCAPTOBENZOTHIOZOL

4. QUALITY ASSURANCE PROVISIONS:

4.1. ACCEPTANCE TESTS AT FACTORY:

4.1.1. VISUAL INSPECTION:
INSPECT COLD PLATE FOR COMPLIANCE WITH DWG 1021521 AS FOR SIZE DIMENSIONS, TOLERANCE, APPEARANCE AND MARKINGS.

4.1.2. PERFORMANCE TESTS:

4.1.2.1. PRESSURE DROP AT A FLOW RATE OF 80#/HR SHALL NOT EXCEED 9 PSIG WHEN USING WATER-GLYCOL SOLUTION PER NOTE 3 ABOVE

4.1.2.2. A PRESSURE DECAY NO GREATER THAN 1.5 PSIG SHALL BE EVIDENCED WHEN UNIT IS SUBJECTED TO 60 PSIG OF DRY AIR FOR 24 HOURS.

4.1.2.3. VISUAL INSPECTION SHALL REVEAL NO DEFORMATION OF THE UNIT AFTER COMPLETION OF THE PRESSURE TEST.

4.1.3. PREPARATION FOR DELIVERY:

4.1.3.1. AFTER COMPLETION OF 4.1.2.3. THE UNIT SHALL BE FLUSHED WITH DRY NITROGEN AT A SUPPLY PRESSURE OF 60 PSIG FOR 3 MINUTES.

4.1.3.2. ENDS OF THE TUBING SHALL BE TAPED OR OTHERWISE SEALED TO PREVENT FOREIGN MATERIAL FROM ENTERING THE UNITS.

4.1.3.3. PLATES SHALL BE CRATED IN WOODEN CONTAINERS OF SUFFICIENT RIGIDITY TO AFFORD PROTECTION DURING TRANSIT VIA COMMERCIAL CARRIER. FOAM OR SUITABLE PACKING SHALL BE USED TO ISOLATE AND SECURE THE PAYLOAD WITHIN THE CONTAINER.

4.2. ACCEPTANCE TESTS AT DESTINATION:

4.2.1. VISUALLY INSPECT UNITS FOR DAMAGE DURING SHIPMENT.

4.2.2. REPEAT 4.1.2.2.

4.2.3. REPEAT 4.1.2.3.

5. PLUG CAPS SHALL BE USED TO PROTECT FITTINGS.

~~6. PAINT FRONT EDGE AND PATCH ON TOP SURFACE OF COLD PLATE CASHMERE BLUE~~

ORIGINAL SOURCE OF SUPPLY
ASTRO DYNAMICS INC.
BURLINGTON, MASS.
MODEL NO. CP7540-2

QTY REQD	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
2	SLEEVE, FLARED TUBE FITTING	MS20819-4D		AL ALLOY	6
2	NUT, UNION	AN818-4D		AL ALLOY	5
2	TUBING .250 OD X .035 WALL			304 CRES	4
8	RIVET, SOLID, CSK 100°	MS20426AD3-6		2117-T4 AL ALLOY	3
4	NUT, ANCHOR, TWO LUG, FLOATING	NAS1068C3		CRES	2
1	COLD PLATE			6061-T6 ALUM	1

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS — DECIMALS .XX ±.03 .XXX ±.015 ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL: AS NOTED

MIT
INSTRUMENTATION LAB
CONTRACT
NAS 9-153

		DATE
APPROVED	[illegible]	12-8-63
CHECKED	[illegible]	12-6-63
DRAWN	[illegible]	12-10-63
APPROVED MSC	[illegible]	
APPROVED BY		
APPROVED BY	[illegible]	
APPROVED BY	[illegible]	

COLD PLATE ASSY
APOLLO GUIDANCE COMPUTER (AGC)
MODEL 56
SPEC CONTROL DWG

SCALE HALF
UNIT WT.
CODE IDENT.

MIT
INSTRUMENTATION LABORATORY
CAMBRIDGE, MASS.
DWG NO.

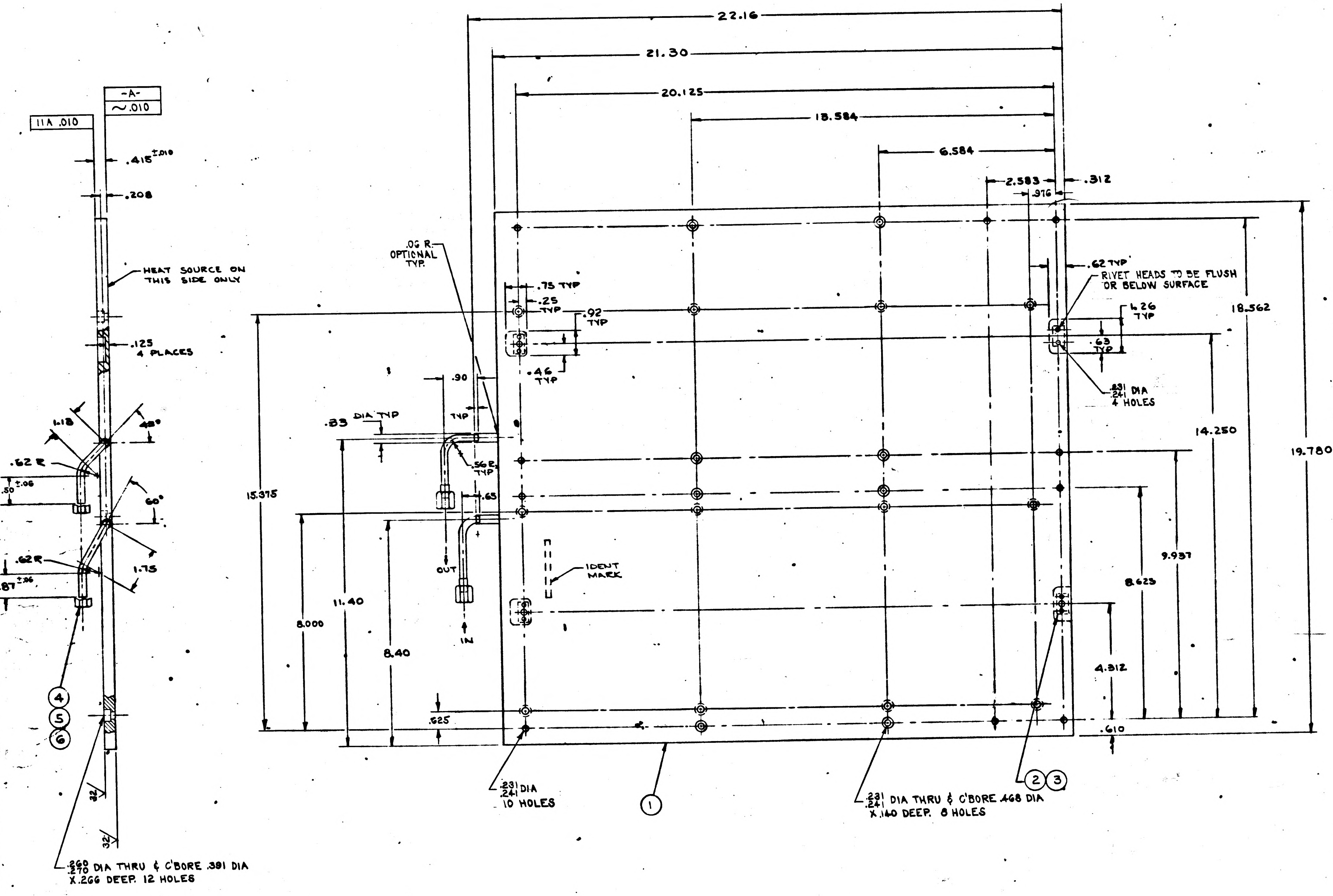
MANNED SPACECRAFT CENTER
HOUSTON TEXAS
NASA DRAWING NO.
1021521
SHEET 1 OF 1

1021521

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 10981 DATE 7/14/64

RAK

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED



22.16
21.30
20.125
18.584
6.584
2.583
.312
.376
-A-
~.010
11A .010
.415 ±.010
.208
HEAT SOURCE ON THIS SIDE ONLY
.125 4 PLACES
1.18
45°
.62 R
.50 ±.06
60°
.62 R
.87 ±.06
1.75
.06 R OPTIONAL TYP
.75 TYP
.25 TYP
.92 TYP
.46 TYP
.62 TYP
RIVET HEADS TO BE FLUSH OR BELOW SURFACE
.26 TYP
.63 TYP
.231 .241 DIA 4 HOLES
18.562
14.250
19.780
15.375
.90
.83 DIA TYP
TYP
.56 R TYP
.65
OUT
IN
IDENT MARK
11.40
8.000
8.40
9.937
8.625
4.312
.625
.610
.231 .241 DIA 10 HOLES
①
.231 .241 DIA THRU & C'BORE .468 DIA X .160 DEEP. 8 HOLES
② ③
④
⑤
⑥
.260 .270 DIA THRU & C'BORE .391 DIA X .266 DEEP. 12 HOLES
32
32

NOTES:
1. GENERAL:
A. INTERPRET DWG IN ACCORDANCE WITH MIL-D-70327
B. MARKING: UNIT TO BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE NASA DWG NO. & REV LETTER. STENCIL .12 HIGH BLACK CHARACTERS & .03 WIDE LINES PER ND1002109.
PACKAGING SHALL BE IN ACCORDANCE WITH MIL-STD-129 WITH MFR NAME AND/OR SYMBOL, LOT OR SERIAL NO., DATE OF MFR OR CODING, NASA DWG NO. & REV. LETTER.
2. FINISH: CHEMICAL FILM IN ACCORDANCE WITH MIL-C-5541.
3. MATERIAL OF THE COLD PLATE SHALL BE COMPATIBLE WITH A LIQUID COOLANT OF THE FOLLOWING COMPOSITION

PARTS BY WEIGHT	COMPONENT
62.500	ETHLYENE GLYCOL PER MIL-E-9500
31.422	TRIPLE DISTILLED WATER
1.563	TRIETHANOLAMINEPHOSPHATE
.156	SODIUMMERCAPTOBENZOTHIOZOL

4. QUALITY ASSURANCE PROVISIONS:
4.1. ACCEPTANCE TESTS AT FACTORY:
4.1.1. VISUAL INSPECTION:
INSPECT COLD PLATE FOR COMPLIANCE WITH DWG 1021521 AS FOR SIZE DIMENSIONS TOLERANCE, APPEARANCE AND MARKINGS.
4.1.2. PERFORMANCE TESTS:
4.1.2.1. PRESSURE DROP AT A FLOW RATE OF 80#/HR SHALL NOT EXCEED 9 PSIG WHEN USING WATER-GLYCOL SOLUTION PER NOTE 3 ABOVE
4.1.2.2. A PRESSURE DECAY NO GREATER THAN 1.5 PSIG SHALL BE EVIDENCED WHEN UNIT IS SUBJECTED TO 60 PSIG OF DRY AIR FOR 24 HOURS.
4.1.2.3. VISUAL INSPECTION SHALL REVEAL NO DEFORMATION OF THE UNIT AFTER COMPLETION OF THE PRESSURE TEST.
4.1.3. PREPARATION FOR DELIVERY:
4.1.3.1. AFTER COMPLETION OF 4.1.2.3. THE UNIT SHALL BE FLUSHED WITH DRY NITROGEN AT A SUPPLY PRESSURE OF 60 PSIG FOR 3 MINUTES.
4.1.3.2. ENDS OF THE TUBING SHALL BE TAPED OR OTHERWISE SEALED TO PREVENT FOREIGN MATERIAL FROM ENTERING THE UNITS.
4.1.3.3. PLATES SHALL BE CRATED IN WOODEN CONTAINERS OF SUFFICIENT RIGIDITY TO AFFORD PROTECTION DURING TRANSIT VIA COMMERCIAL CARRIER. FOAM OR SUITABLE PACKING SHALL BE USED TO ISOLATE AND SECURE THE PAYLOAD WITHIN THE CONTAINER.
4.2. ACCEPTANCE TESTS AT DESTINATION:
4.2.1. VISUALLY INSPECT UNITS FOR DAMAGE DURING SHIPMENT.
4.2.2. REPEAT 4.1.2.2.
4.2.3. REPEAT 4.1.2.3.
5. PLUG CAPS SHALL BE USED TO PROTECT FITTINGS.
6. PAINT FRONT EDGE AND PATCH ON TOP SURFACE OF COLD PLATE CASHMERE BLUE.

ORIGINAL SOURCE OF SUPPLY
ASTRO DYNAMICS INC.
BURLINGTON, MASS.
MODEL NO. CP7540-2

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
2	SLEEVE, FLARED TUBE FITTING	MS20819-4D		AL ALLOY	6
2	NUT, UNION	AN818-4D		AL ALLOY	5
2	TUBING .250 OD X .035 WALL			304 CRES	4
8	RIVET, SOLID, CSK 100°	MS20426AD3-6		2117-T4 AL ALLOY	3
4	NUT, ANCHOR, TWO LUG, FLOATING	NAS1068C3		CRES	2
1	COLD PLATE			6061-T6 ALUM	1

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS — DECIMALS .XX ±.03 .XXX ±.015 ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL: AS NOTED

MIT INSTRUMENTATION LAB CONTRACT NAS 9-153

		DATE
APPROVED		12-11-63
CHECKED	OHS	12-10-63
DRAWN	JGC	12-10-63
APPROVED FOR MSC		
APPROVED BY		
APPROVED BY	J Hald	7/14/64
APPROVED BY	C	7/14/64

COLD PLATE ASSY
APOLLO GUIDANCE COMPUTER (AGC)
MODEL SS
SPEC CONTROL DWG

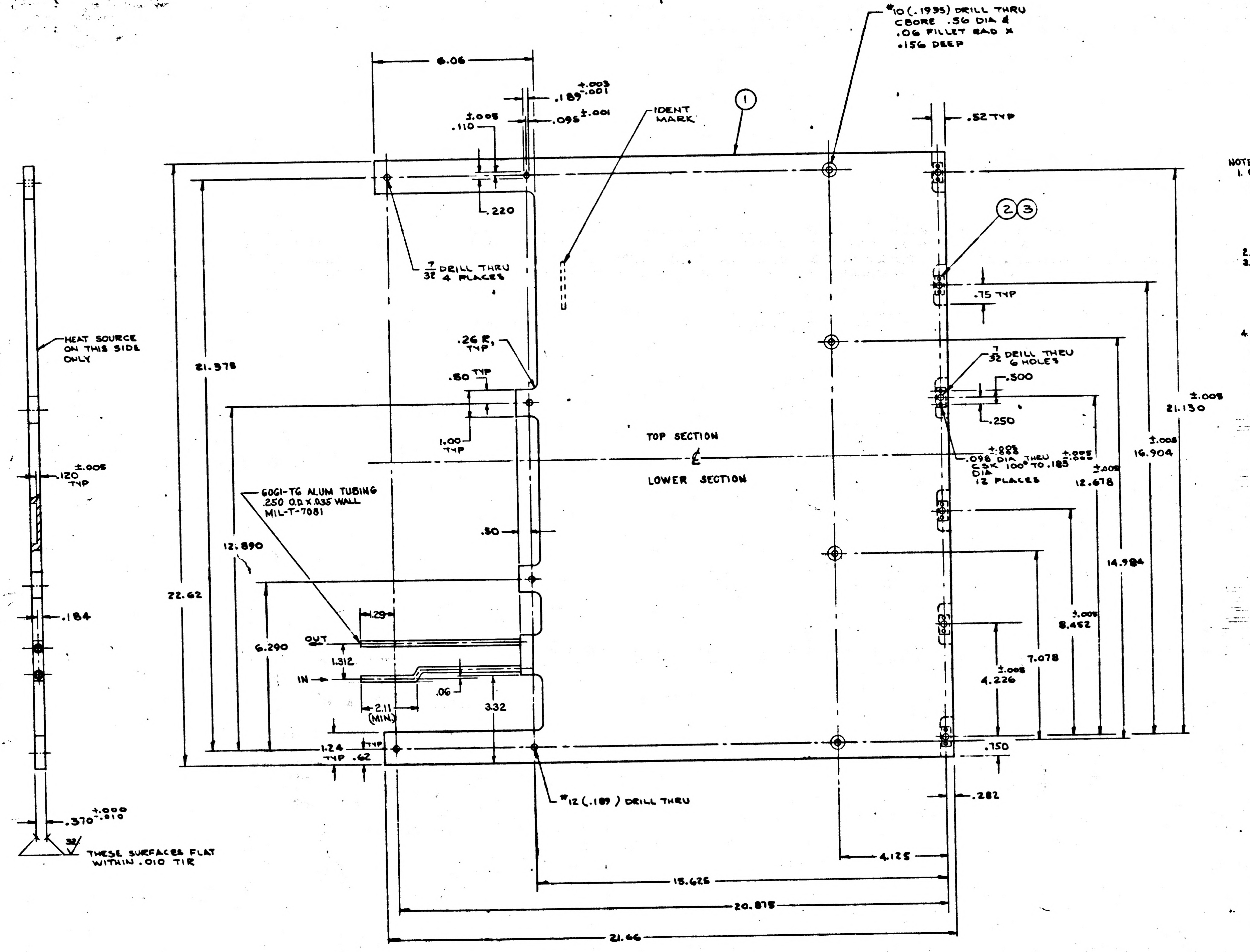
SCALE HALF
UNIT WT.
CODE IDENT.

MIT INSTRUMENTATION LABORATORY
Cambridge, Mass.
DWG. NO.
MANNED SPACECRAFT CENTER
HOUSTON TEXAS
NASA DRAWING NO.
1021521
SHEET 1 OF 1

1021521

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 10981 DATE 7/14/64

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY



#10 (.1935) DRILL THRU
CBORE .56 DIA &
.06 FILLET RAD X
.156 DEEP
6.06
.189 +.003 -.001
.110 ±.005
.095 ±.001
IDENT MARK
①
.52 TYP
②③
.220
7/32 DRILL THRU 4 PLACES
HEAT SOURCE ON THIS SIDE ONLY
21.375
.26 R TYP
.50 TYP
1.00 TYP
.75 TYP
7/32 DRILL THRU 6 HOLES
.500
.250
±.005 21.130
±.005 16.904
TOP SECTION
℄
LOWER SECTION
.098 DIA THRU CSK 100° TO .185 +.005 -.000 DIA 12 PLACES
±.005 12.678
.120 ±.005 TYP
6061-T6 ALUM TUBING .250 O.D. X .035 WALL MIL-T-7081
12.890
.50
14.984
22.62
.184
1.29
±.005 8.452
OUT
6.290
1.312
7.078
IN
.06
±.005 4.226
2.11 (MIN)
3.32
1.24 TYP
.62 TYP
.750
#12 (.189) DRILL THRU
.282
.370 +.000 -.010
32
THESE SURFACES FLAT WITHIN .010 TIR
4.125
15.625
20.875
21.46

NOTES:

1. GENERAL:
   A. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327
   B. MARKING: UNIT TO BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE NASA DWG NO. & REV. LETTER. STENCIL .12 HIGH BLK CHARACTERS & .03 WIDE LINES PER ND1002109.
   PACKAGING SHALL BE IN ACCORDANCE WITH MIL-STD-129 WITH MFR NAME AND/OR SYMBOL, LOT OR SERIAL NO., DATE OF MFR OR CODING, NASA DWG NO. & REV LETTER.
2. FINISH: CHEMICAL FILM IN ACCORDANCE WITH MIL-C-5541.
3. MATERIAL OF THE COLD PLATE SHALL BE COMPATIBLE WITH A LIQUID COOLANT OF THE FOLLOWING COMPOSITION.

PARTS BY WT	COMPONENT
62.500	ETHYLENE GLYCOL PER MIL-E-9500
37.422	TRIPLE DISTILLED WATER
1.563	TRIETHANOLAMINEPHOSPHATE
.156	SODIUMMERCAPTOBENZOTHIOZOL

4. QUALITY ASSURANCE PROVISIONS:

4.1. ACCEPTANCE TESTS AT FACTORY:

4.1.1. VISUAL INSPECTION:
INSPECT COLD PLATE FOR COMPLIANCE WITH DWG 1021522 AS FOR SIZE, DIMENSIONS, TOLERANCE, APPEARANCE AND MARKINGS.

4.1.2. PERFORMANCE TESTS:

4.1.2.1. PRESSURE DROP AT A FLOW RATE OF 160#/HR SHALL NOT EXCEED 3 PSIG WHEN USING WATER-GLYCOL SOLUTION PER NOTE 3 ABOVE.

4.1.2.2. A PRESSURE DECAY NO GREATER THAN 1.5 PSIG SHALL BE EVIDENCED WHEN UNIT IS SUBJECTED TO 60 PSIG OF DRY AIR FOR 24 HOURS

4.1.2.3. VISUAL INSPECTION SHALL REVEAL NO DEFORMATION OF THE UNIT AFTER COMPLETION OF THE PRESSURE TEST.

4.1.3. PREPARATION FOR DELIVERY:

4.1.3.1. AFTER COMPLETION OF 4.1.2.3. THE UNIT SHALL BE FLUSHED WITH DRY NITROGEN AT A SUPPLY PRESSURE OF 60 PSIG FOR 3 MINUTES.

4.1.3.2. ENDS OF THE TUBING SHALL BE TAPED OR OTHERWISE SEALED TO PREVENT FOREIGN MATERIAL FROM ENTERING THE UNITS.

4.1.3.3. PLATES SHALL BE CRATED IN WOODEN CONTAINERS OF SUFFICIENT RIGIDITY TO AFFORD PROTECTION DURING TRANSIT VIA COMMERCIAL CARRIER. FOAM OR SUITABLE PACKING SHALL BE USED TO ISOLATE AND SECURE THE PAYLOAD WITHIN THE CONTAINER.

4.2. ACCEPTANCE TESTS AT DESTINATION.

4.2.1. VISUALLY INSPECT UNITS FOR DAMAGE DURING SHIPMENT.

4.2.2. REPEAT 4.1.2.2.

4.2.3. REPEAT 4.1.2.3.

5. PLUG CAPS SHALL BE USED TO PROTECT FITTINGS.
6. PAINT FRONT EDGE AND PATCH ON TOP SURFACE OF COLD PLATE CASHMERE BLUE.

ORIGINAL SOURCE OF SUPPLY:
ASTRO DYNAMICS INC.
BURLINGTON, MASS.
MODEL NO. CP7540-2

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
12	RIVET, SOLID, CSK 100°	MS20426AD3-6		2117-T4 AL ALLOY	3
6	NUT, ANCHOR, TWO LUG, FLOATING	NAS 1068C3		CRES	2
1	COLD PLATE			6061-T6 ALUM	1

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ~ DECIMALS .XX ±.03 .XXX ±.015 ANGLES ±2°
DO NOT SCALE THIS DRAWING
MATERIAL: AS NOTED

MIT INSTRUMENTATION LAB CONTRACT NAS 9-153
APPROVED 12/11/63
CHECKED 12-16-63
APPROVED FOR MSC
APPROVED BY
APPROVED BY
APPROVED BY
W Schaffer 7/7/64

COLD PLATE ASSY
POWER & SERVO UNIT
MODEL 66
SPEC CONTROL DWG

SCALE HALF

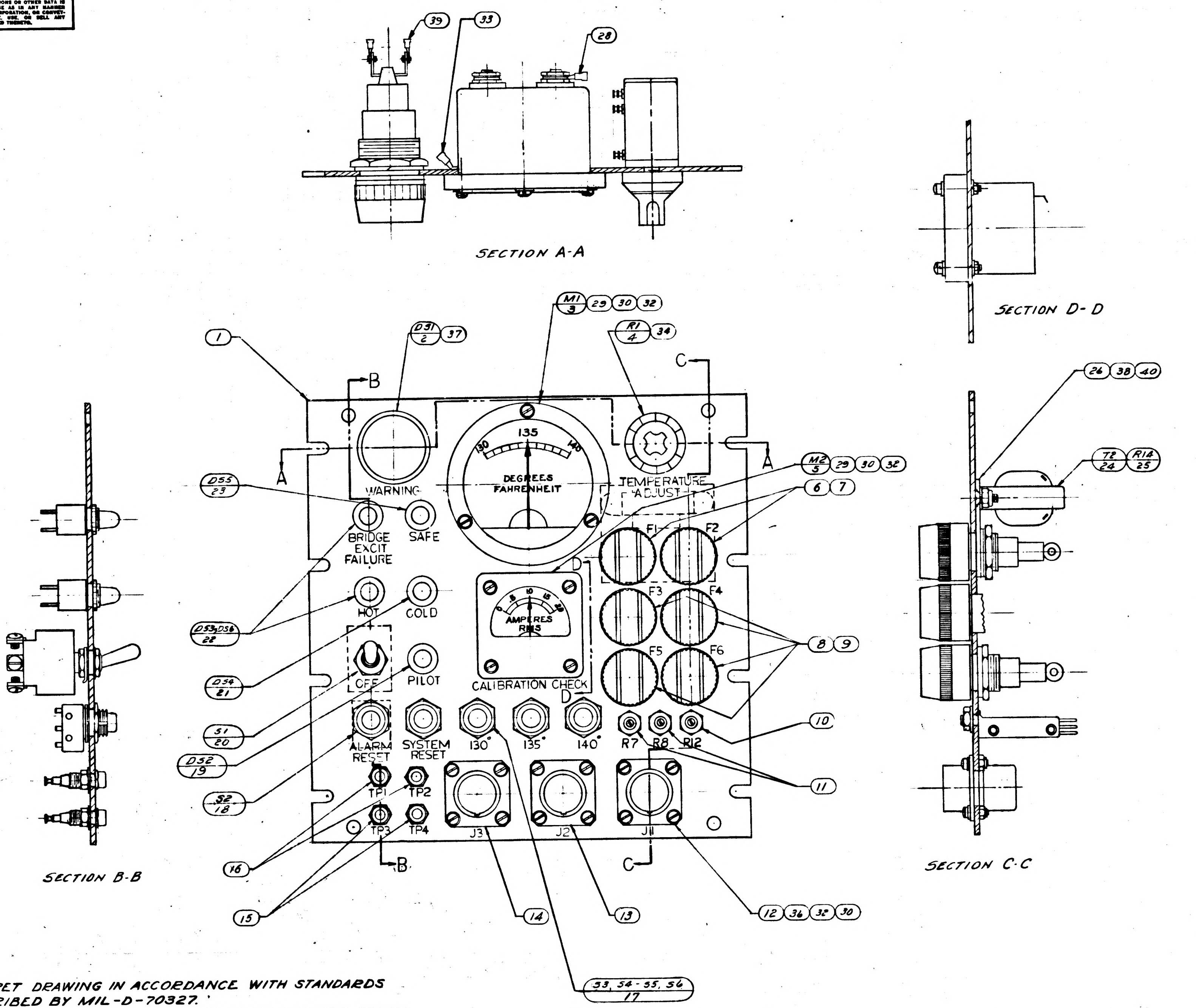
MIT INSTRUMENTATION LABORATORY
CAMBRIDGE, MASS.
MANNED SPACECRAFT CENTER
HOUSTON TEXAS
NASA DRAWING NO. 1021522
SHEET 1 OF 1

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 10834 DATE 7/7/64

INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 16922						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 18596			4/27/6	W.L.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33
28
SECTION A-A
SECTION D-D
SECTION B-B
SECTION C-C
1
DS1 / 2
37
M1 / 3
29
30
32
R1 / 4
34
M2 / 5
6
7
DS5 / 23
DS3, DS6 / 22
DS4 / 21
S1 / 20
DS2 / 19
S2 / 18
8
9
10
11
12
36
13
14
15
16
26
38
40
T2 / 24
R18 / 25
S3, S4-S5, S6 / 17
WARNING
135
130
140
DEGREES FAHRENHEIT
TEMPERATURE ADJUST
BRIDGE EXCIT FAILURE
SAFE
HOT
COLD
OFF
PILOT
AMPERES RMS
CALIBRATION CHECK
F1
F2
F3
F4
F5
F6
ALARM RESET
SYSTEM RESET
130°
135°
140°
R7
R8
R12
TP1
TP2
TP3
TP4
J3
J2
J1
A
B
C
D

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NO., REVISION LETTER, SERIAL NO. & MANUFACTURERS SYMBOL PER ND 1002019.
3. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH MIL-STD-440, WITH SN60WRAP2 SOLDER PER QQ-S-571.
4. CURRENT TRANSFORMER CALIBRATION RESISTOR SELECTED AT TEST.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
				45
				44
				43
				42
				41
2	MS35249-35		SCREW, FL HD CRES. – #6-32 x 3/16 LG	40
2	MS25036-2		TERMINAL LUG-CRIMP	39
2	MS20365-632A		NUT, SELF LKG, HEX. - #6-32	38
1	MS15567		LAMP - INCADESCENT, 656DC (120)	37
12	MS35275-17		SCREW, FIL. HD. CRES. – #4-40 x 1/2 LG	36
				35
1	1015974-172		DIAL, 10 TURN	34
2	MS25036-48		TERMINAL LUG, - CRIMP	33
19	MS20365-440A		NUT SELF LKG, HEX, #4-40	32
				31
19	MS15795-803		WASHER, FLAT, CRES. – #4	30
7	MS35275-18		SCREW, FIL. HD. CRES – #4-40 x 5/8 LG	29
2	MS25036-50		TERMINAL LUG, – CRIMP	28
				27
1	1015437		BRACKET, TRANSFORMER	26
1	1010267-SAT	See Note 4	RESISTOR	25
1	1015436		TRANSFORMER CURRENT	24
1	1016242-4		LIGHT - INDICATOR (SAFE)	23
2	1016242-2		LIGHT - INDICATOR (HOT) (BRIDGE)	22
1	1016242-3		LIGHT - INDICATOR (COLD)	21
1	MS35059-22		SWITCH - TOGGLE (DPST)	20
1	1016242-1		LIGHT INDICATOR (PILOT)	19
1	1016254		SWITCH - PUSH BUTTON-ALT. ACTION	18
4	1021575		SWITCH - PUSH BUTTON - MOMENTARY	17
2	MS16108-2A		JACK TIP, RED	16
2	MS16108-3A		JACK TIP, BLACK	15
1	MS3120E-12-8PW		CONNECTOR, RECEPTACLE, ELEC.	14
1	MS3120E-12-10SW		CONNECTOR, RECEPTACLE, ELEC.	13
1	MS3120E-12-3PY		CONNECTOR, RECEPTACLE, ELEC.	12
2	1016253-2		RESISTOR, VAR - 10K	11
1	1016253-1		RESISTOR, VAR. - 2K	10
4	1015466-2		FUSEHOLDER, INDICATING	9
4	MS90078-9		FUSE 1A, 3AG	8
2	1015466-1		FUSEHOLDER, INDICATING	7
2	MS90078-24		FUSE - 1A SLOW BLOW, 3AG	6
1	1016248		AMMETER 0-2A	5
1	1016251		RESISTOR, VAR. - 10 TURN - 50Ω	4
1	1016247		METER - TEMPERATURE (10-0-10UA)	3
1	1016241		LIGHT - INDICATING	2
1	1015428		FRONT PANEL - UPPER MOUNT PLATE	1

LIST OF MATERIALS

1900496	1900496
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN	R.H. Zeigler	7-29-'64
CHECKED		
APPROVED	Bartlett	2/26/65
APPROVED	M. Watson	2/26/65
APPROVED MIT	W. Cuyler	2 Mar 65
APPROVED MSC	G.R. Ft.	3/2/65
		DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRONT PANEL
SUB ASSEMBLY
PORTABLE TEMP. CONTROL

CODE IDENT NO.	SIZE	DRAWING NO.
	D	1021572

SCALE 1:1 SHEET 1 OF 1

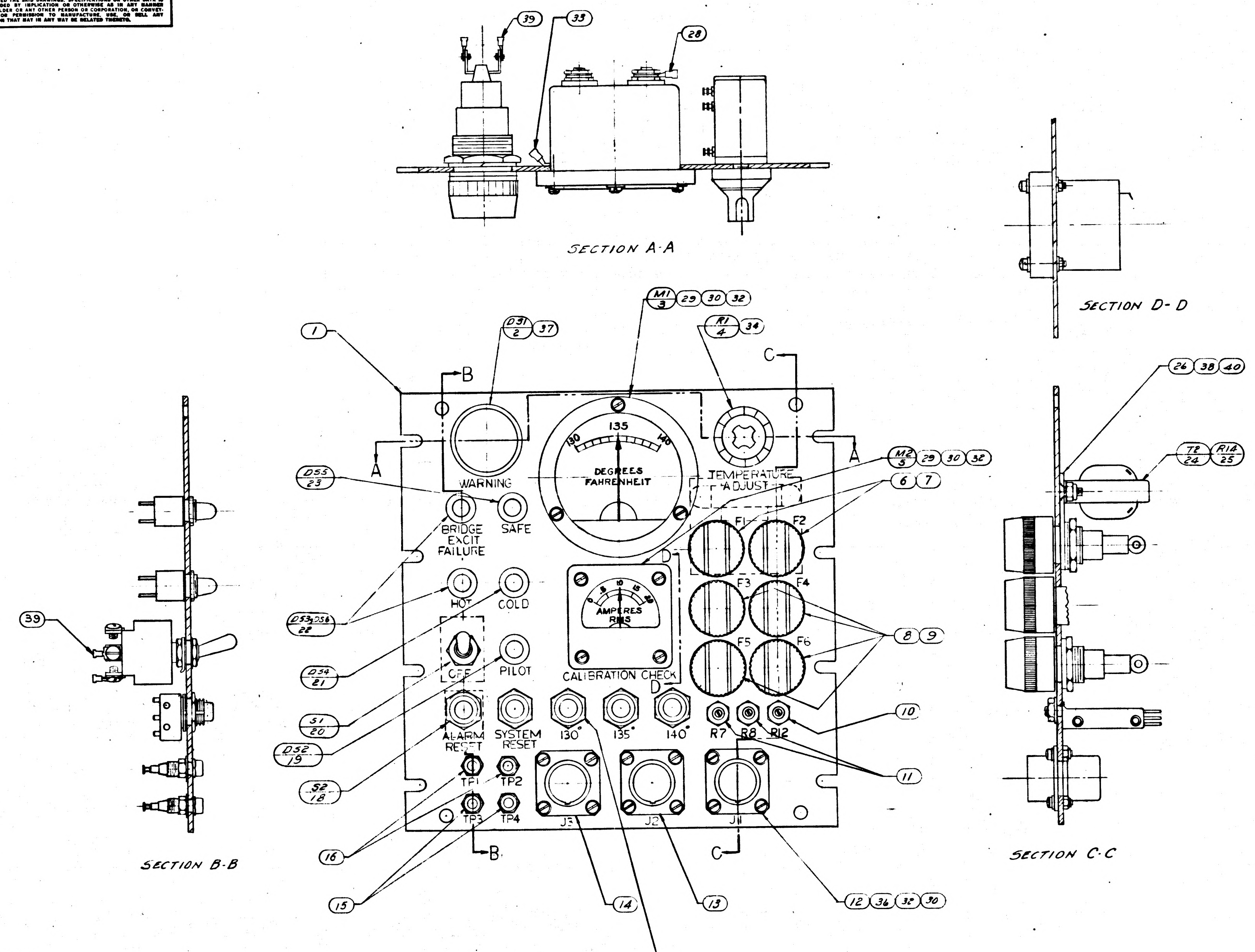
1021572 A

MASTER

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 16922

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 18596			4/22/65	WK
B		REVISED PER TDRR 21197		VV	27JUL65	WK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33
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SECTION A-A
SECTION D-D
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D31 2
37
M1 3
29 30 32
R1 4
34
B
C
A
A
WARNING
130
135
140
DEGREES FAHRENHEIT
TEMPERATURE ADJUST
D55 23
M2 5
29 30 32
6 7
BRIDGE EXCIT FAILURE
SAFE
F1
F2
F3
F4
F5
F6
HOT
COLD
D53, D56 22
D54 21
S1 20
OFF
PILOT
AMPERES RMS
CALIBRATION CHECK
D
8 9
D52 19
S2 18
ALARM RESET
SYSTEM RESET
130°
135°
140°
R7
R8
R12
10
11
TP1
TP2
TP3
TP4
J3
J2
J1
16
15
14
13
12 36 32 30
26 38 40
T2 24
R14 25
SECTION B-B
SECTION C-C

53, 54-55, 56
17

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NO., REVISION LETTER, SERIAL NO. & MANUFACTURERS SYMBOL PER ND 1002019.
3. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH MIL-STD-440, WITH SN60WRAP2 SOLDER PER QQ-S-571.
4. CURRENT TRANSFORMER CALIBRATION RESISTOR SELECTED AT TEST.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
				45
				44
				43
				42
				41
2	MS35249-35		SCREW, FL HD CRES. — #6-32 × 3/8 LG	40
6	MS25036-2		TERMINAL LUG-CRIMP	39
2	MS20365-632A		NUT, SELF LKG, HEX.-#6-32	38
1	MS15567		LAMP-INCADESCENT 656DC(120)	37
12	MS35275-17		SCREW, FIL. HD. CRES. — #4-40 × 1/2 LG	36
				35
1	1015974-172		DIAL, 10 TURN	34
2	MS25036-48		TERMINAL LUG. - CRIMP	33
19	MS20365-440A		NUT SELF LKG. HEX: #4-40	32
				31
19	MS15795-803		WASHER FLAT CRES - #4	30
7	MS35275-18		SCREW FIL. HD. CRES-#4-40 × 5/8 LG	29
2	MS25036-50		TERMINAL LUG. - CRIMP	28
				27
1	1015437		BRACKET, TRANSFORMER	26
1	1010267-SAT	SEE NOTE 4	RESISTOR	25
1	1015436		TRANSFORMER CURRENT	24
1	1016242-4		LIGHT- INDICATOR (SAFE)	23
2	1016242-2		LIGHT-INDICATOR (HOT) (BRIDGE)	22
1	1016242-3		LIGHT-INDICATOR (COLD)	21
1	MS35059-22		SWITCH- TOGGLE (DPST)	20
1	1016242-1		LIGHT INDICATOR (PILOT)	19
1	1016254		SWITCH - PUSH BUTTON-ALT. ACTION	18
4	1021575		SWITCH - PUSH BUTTON - MOMENTARY	17
2	MS16108-2A		JACK TIP, RED	16
2	MS16108-3A		JACK TIP, BLACK	15
1	1016244-002		CONNECTOR, RECEPTACLE, ELEC.	14
1	MS3120E-12-10SW		CONNECTOR, RECEPTACLE, ELEC.	13
1	MS3120E-12-3PY		CONNECTOR, RECEPTACLE, ELEC.	12
2	1016253-2		RESISTOR, VAR - 10K	11
1	1016253-1		RESISTOR, VAR. - 2K	10
4	1015466-2		FUSEHOLDER, INDICATING	9
4	MS90078-9		FUSE 1A, 3AG	8
2	1015466-1		FUSEHOLDER, INDICATING	7
2	MS90078-24		FUSE - 1A SLOW BLOW, 3AG	6
1	1016248		AMMETER 0-2A	5
1	1016251		RESISTOR, VAR.- 10 TURN - 50Ω	4
1	1016247		METER - TEMPERATURE (10-0-10UA)	3
1	1016241		LIGHT- INDICATING	2
1	1015428		FRONT PANEL - UPPER MOUNT PLATE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1900496	1900496

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN P.H. Senger 7-29-64
CHECKED
APPROVED Bartlett 2/26/65
APPROVED M. Watson 2/26/65
APPROVED MIT W. Kupfer 2 Mar 65
APPROVED MSC G.K. 3/2/65
DATE

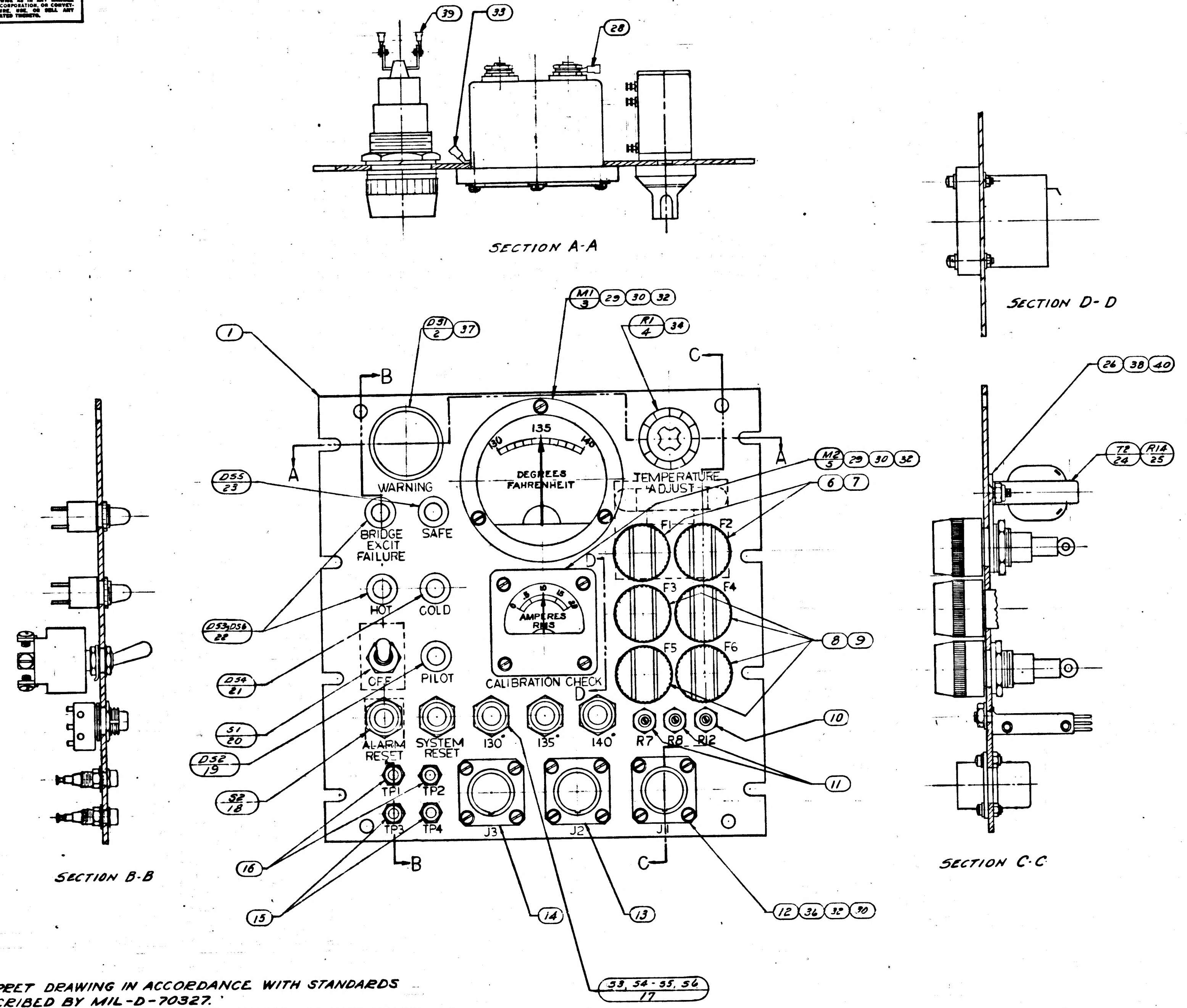
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FRONT PANEL
SUB ASSEMBLY
PORTABLE TEMP. CONTROL

CODE IDENT NO. 80230
SIZE D
DRAWING NO. 1021572
SCALE 1/1
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 16922						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED



39
33
28
SECTION A-A
SECTION D-D
M1 3
29 30 32
DS1 2
37
R1 4
34
1
B
C
A
A
WARNING
135
130
140
DEGREES FAHRENHEIT
TEMPERATURE ADJUST
DS5 23
BRIDGE EXCIT FAILURE
SAFE
M2 5
29 30 32
6 7
F1
F2
D
HOT
COLD
F3
F4
AMPERES RMS
DS3 DS4 22
DS4 21
OFF
PILOT
F5
F6
8 9
S1 20
CALIBRATION CHECK
D
DS2 19
ALARM RESET
SYSTEM RESET
130°
135°
140°
R7
R8
R12
10
S2 18
TP1
TP2
TP3
TP4
11
J3
J2
J1
B
C
16
15
14
13
12 36 38 40
53, 54 - 55, 56 17
SECTION B-B
26 38 40
T2 24
R16 25
SECTION C-C

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. IDENTIFY USING DRAWING NO., REVISION LETTER, SERIAL NO. & MANUFACTURERS SYMBOL PER ND 1002019.
3. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH MIL-STD-440, WITH SN60WRAP2 SOLDER PER QQ-S-571.
4. CURRENT TRANSFORMER CALIBRATION RESISTOR SELECTED AT TEST.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
				45
—				44
				43
				42
				41
2	MS35249-35		SCREW, FL HD CRES. — #6-32 × 3/16 LG	40
2	MS25036-2		TERMINAL LUG-CRIMP	39
2	MS20365-632		NUT, SELF LKG, HEX.- CRES.-#6-32	38
1	MS15567		LAMP - INCADESCENT, 656DC(120)	37
12	MS35275-17		SCREW, FIL. HD. CRES. — #4-40 × 1/2 LG	36
				35
1	1015974-172		DIAL, 10 TURN	34
2	MS25036-48		TERMINAL LUG, - CRIMP	33
19	MS20365-440		NUT SELF LKG. HEX, CRES.- #4-40	32
				31
19	MS15795-803		WASHER, FLAT CRES — #4	30
7	MS35275-18		SCREW. FIL. HD. CRES-#4-40×5/8 LG	29
2	MS25036-50		TERMINAL LUG, - CRIMP	28
				27
1	1015437		BRACKET, TRANSFORMER	26
1	1010267-SAT	See Note 4	RESISTOR	25
1	1015436		TRANSFORMER CURRENT	24
1	1016242-4		LIGHT- INDICATOR (SAFE)	23
2	1016242-2		LIGHT - INDICATOR (HOT) (BRIDGE)	22
1	1016242-3		LIGHT - INDICATOR (COLD)	21
1	MS35059-22		SWITCH - TOGGLE (DPST)	20
1	1016242-1		LIGHT INDICATOR (PILOT)	19
1	1016254		SWITCH - PUSH BUTTON-ALT. ACTION	18
4	1021575		SWITCH - PUSH BUTTON - MOMENTARY	17
2	MS16108-2A		JACK TIP, RED	16
2	MS16108-3A		JACK TIP, BLACK	15
1	MS3120E-12-8PW		CONNECTOR, RECEPTACLE, ELEC.	14
1	MS3120E-12-10SW		CONNECTOR, RECEPTACLE, ELEC.	13
1	MS3120E-12-3PY		CONNECTOR, RECEPTACLE, ELEC.	12
2	1016253-2		RESISTOR, VAR - 10K	11
1	1016253-1		RESISTOR, VAR. - 2K	10
4	1015466-2		FUSEHOLDER, INDICATING	9
4	MS90078-9		FUSE 1A, 3AG	8
2	1015466-1		FUSEHOLDER, INDICATING	7
2	MS90078-24		FUSE - 1A SLOW BLOW, 3AG	6
1	1016248		AMMETER 0-2A	5
1	1016251		RESISTOR, VAR.- 10 TURN - 50Ω	4
1	1016247		METER - TEMPERATURE (10-0-10UA)	3
1	1016241		LIGHT- INDICATING	2
1	1015428		FRONT PANEL - UPPER MOUNT PLATE	1

LIST OF MATERIALS

1900496	1900496
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN	P.H. Enzer	7-29-64
CHECKED		
APPROVED	Bartlett	2/26/65
APPROVED	J. M. Watson	2/26/65
APPROVED MIT	W. Kupfer	2 Mar 65
APPROVED MSC		3/2/65
		DATE

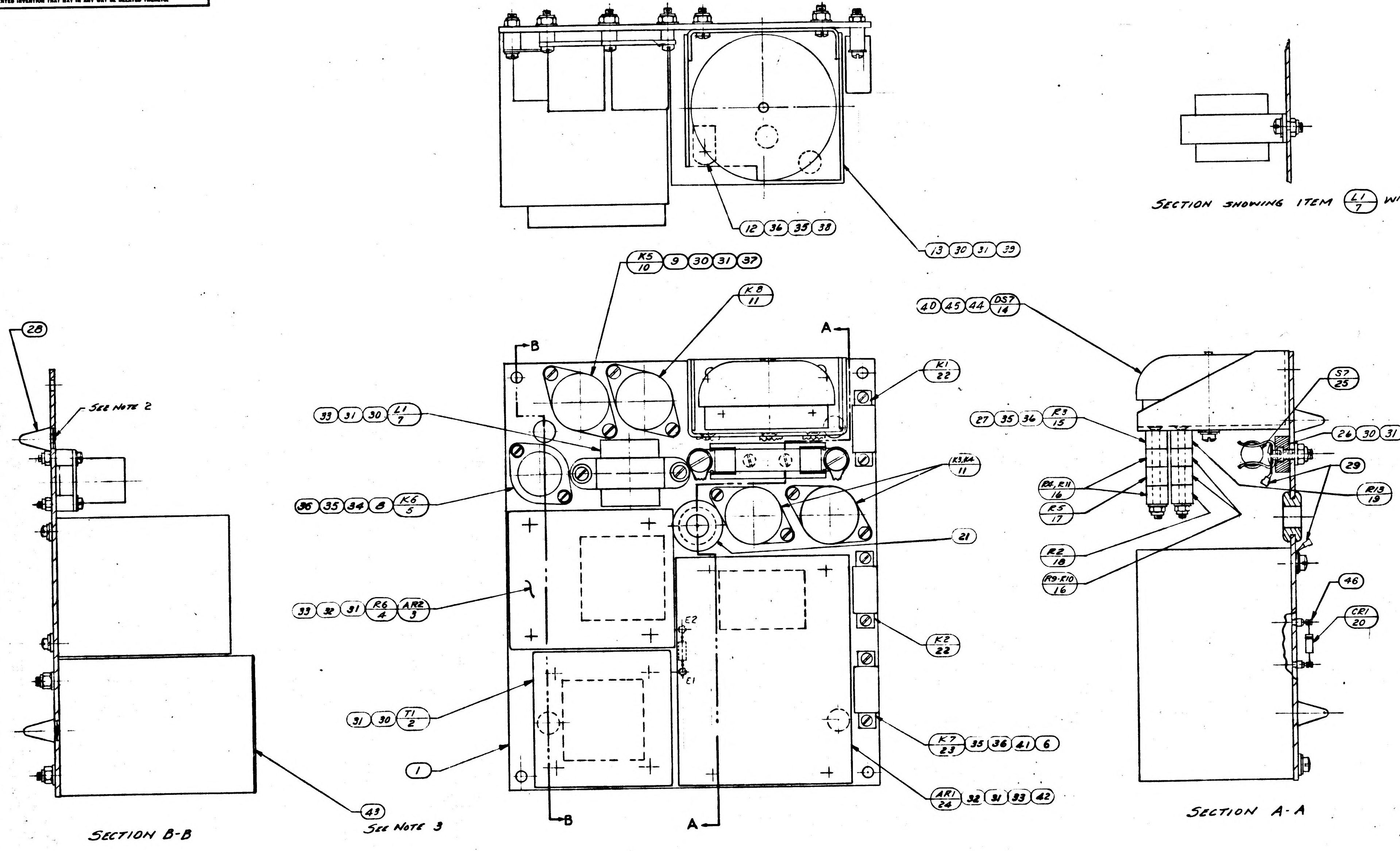
FRONT PANEL
SUB ASSEMBLY
PORTABLE TEMP. CONTROL

CODE IDENT NO.	SIZE	DRAWING NO.
	D	1021572
SCALE 1:1		SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 16922

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 18596			4/27/65	WK.



QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1006689-1		TERMINAL	46
2	MS15795-807		WASHER - FLAT - CRES - #8	45
2	MS35275-45		SCREW - FIL HD - CRES - #8-32 x 1/2 LG	44
A/R		SEE NOTE 3	GRAY FIBER SHEET	43
2	MS25036-2		TERMINAL LUG - CRIMP	42
				.
2	MS35338-80		WASHER - LOCK - SPLIT - CRES - #8	40
6	MS35275-30		SCREW - FIL. HD. - CRES - #6-32 x 1/2 LG	39
1	MS35249-22		SCREW - FL. HD. - CRES. - #4-40 x 3/8 LG	38
8	MS35275-31		SCREW - FIL HD - CRES. - #6-32 x 5/8 LG	37
13	MS20365-440A		NUT - SELF LKG. HEX - #4-40	36
13	MS15795-804		WASHER - FLAT - CRES. - #4	35
8	MS35275-19		SCREW - FIL. HD - CRES. - #4-40 x 3/4 LG	34
10	MS35275-28		SCREW - FIL. HD. - CRES - #6-32 x 3/8 LG	33
8	MS35338-79		WASHER - LOCK - SPLIT - CRES. - #6	32
28	MS15795-806		WASHER - FLAT - CRES. - #6	31
20	MS20365-632A		NUT - SELF LKG - HEX. - #6-32	30
2	MS25036-49		TERMINAL LUG - CRIMP	29
4	1015433		PIN - LOCATING	28
2	1015450-3		SCREW - FL. HD - #4-40 x 1 5/8 LG	27
1	1015435		FLASHER MOUNT ASSEMBLY	26
1	1016255		FLASHER	25
1	1016377		CONTROL AMPLIFIER	24
1	1015832-120		RELAY	23
2	1015832-112		RELAY	22
1	MS35489-11		GROMMET	21
1	1010362-001		DIODE 1N645	20
1	1016252-1		RESISTOR - 735Ω ± .1%	19
1	1016252-5		RESISTOR - 1535Ω ± .1%	18
1	1016252-2		RESISTOR - 2133Ω ± .1%	17
4	1016252-3		RESISTOR - 2309Ω ± .1%	16
1	1016252-4		RESISTOR - 2504Ω ± .1%	15
1	1016243		BELL	14
1	1015434		BRACKET - BELL MOUNTING	13
1	1015985-205		CLAMP - CABLE	12
3	1016246		RELAY - 4PDT	11
1	1016246		RELAY - 4PDT	10
8	1015430-2		SPACER	9
2	1015430-3		SPACER	8
1	1016063		REACTOR	7
6	1015430-4		SPACER	6
1	1015833-10		RELAY - THERMAL TIME DELAY	5
1	1010267-SAT	SEE NOTE 6	RESISTOR	4
1	1016384		ALARM AMPLIFIER	3
1	1015997		TRANSFORMER - PWR STEP DOWN 115V:30V	2
1	1015427		LOWER MOUNTING PLATE	1

LIST OF MATERIALS

1021573 A

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. STAKED SURFACE TO BE FLUSH OR RECESSED FROM TOP SURFACE OF MOUNTING PLATE.
3. INSULATE TOP OF TRANSFORMER WITH A .007 GRAY FIBER SHEET PER MIL-I-695A TYPE F WITH A MINIMUM DIELECTRIC STRENGTH OF 250 VOLTS PER MIL.
4. IDENTIFY USING DRAWING NO., REVISION LETTER, SERIAL NO. & MANUFACTURERS SYMBOL PER ND1002019.
5. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH MIL-STD-440, WITH SN60WRAP2 SOLDER PER QQ-S-571.
6. AMPLIFIER (CURRENT SOURCE) CALIBRATION RESISTOR SUPPLIED WITH AMPLIFIER BY VENDOR.

MASTER

NEXT ASSY	USED ON
1900496	1900496

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, CAPACITOR VALUES ARE IN µf RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL ~

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CAMBRIDGE, MASS.

		DATE
DRAWN	PH Forgue	8-11-64
CHECKED		
APPROVED	Bert Hetz	2/26/65
APPROVED	J. M. Watson	2/26/65
APPROVED MIT	W. Wrigley	
APPROVED MSC	C.C. Kraft	3/2/65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LOWER MOUNTING PLATE
SUB ASSEMBLY
PORTABLE TEMP. CONTROL

CODE IDENT NO.
SIZE D
DRAWING NO. 1021573
SCALE 1/1
SHEET 1 OF 1

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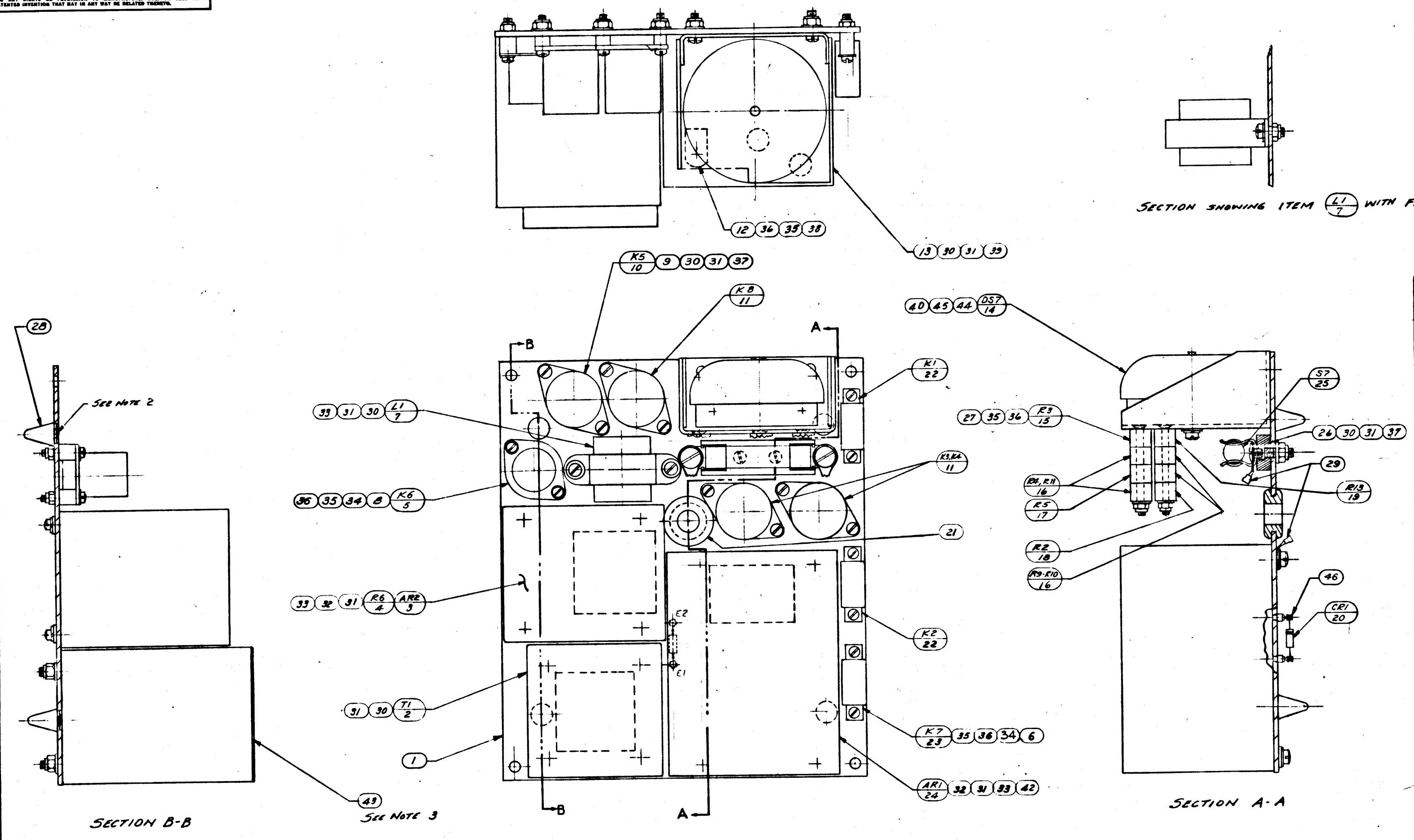
REVISIONS 16922

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 18596			4/27/65	WK
B		REVISED PER TDRR 19911		VV	8 June 65	WC



SECTION SHOWING ITEM L1/7 WITH FASTENER

SECTION B-B

SECTION A-A

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
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2	MS25036-2		TERMINAL LUG - CRIMP	42
2	MS35338-80		WASHER - LOCK - SPLIT - CRES - #8	40
6	MS35275-30		SCREW - FIL. HD. - CRES - #6-32 x 1/2 LG	39
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8	MS35275-31		SCREW - FIL HD - CRES. - #6-32 x 5/8 LG	37
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10	MS35275-28		SCREW - FIL. HD. - CRES - #6-32 x 3/8 LG	33
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28	MS15795-806		WASHER - FLAT - CRES. - #6	31
20	MS20365-632A		NUT - SELF LKG - HEX - #6-32	30
2	MS25036-49		TERMINAL LUG - CRIMP	29
4	1015433		PIN - LOCATING	28
2	1015450-3		SCREW - FL. HD - #4-40 x 1 5/16 LG	27
1	1015435		FLASHER MOUNT ASSEMBLY	26
1	1016255		FLASHER	25
1	1016377		CONTROL AMPLIFIER	24
1	1015832-120		RELAY	23
2	1015832-112		RELAY	22
1	MS35489-11		GROMMET	21
1	1010362-001		DIODE 1N645	20
1	1016252-1		RESISTOR - 735 Ω ±.1%	19
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1	1016063		REACTOR	7
6	1015430-4		SPACER	6
1	1015833-10		RELAY - THERMAL TIME DELAY	5
1	1010267-SAT	SEE NOTE 6	RESISTOR	4
1	1016384		ALARM AMPLIFIER	3
1	1015997		TRANSFORMER - PWR STEP DOWN 115V:30V	2
1	1015427		LOWER MOUNTING PLATE	1

LIST OF MATERIALS

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. STAKED SURFACE TO BE FLUSH OR RECESSED FROM TOP SURFACE OF MOUNTING PLATE.
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6. AMPLIFIER (CURRENT SOURCE) CALIBRATION RESISTOR SUPPLIED WITH AMPLIFIER BY VENDOR.

MASTER

NEXT ASSY	USED ON
1900496	1900496

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES,
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL ~

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

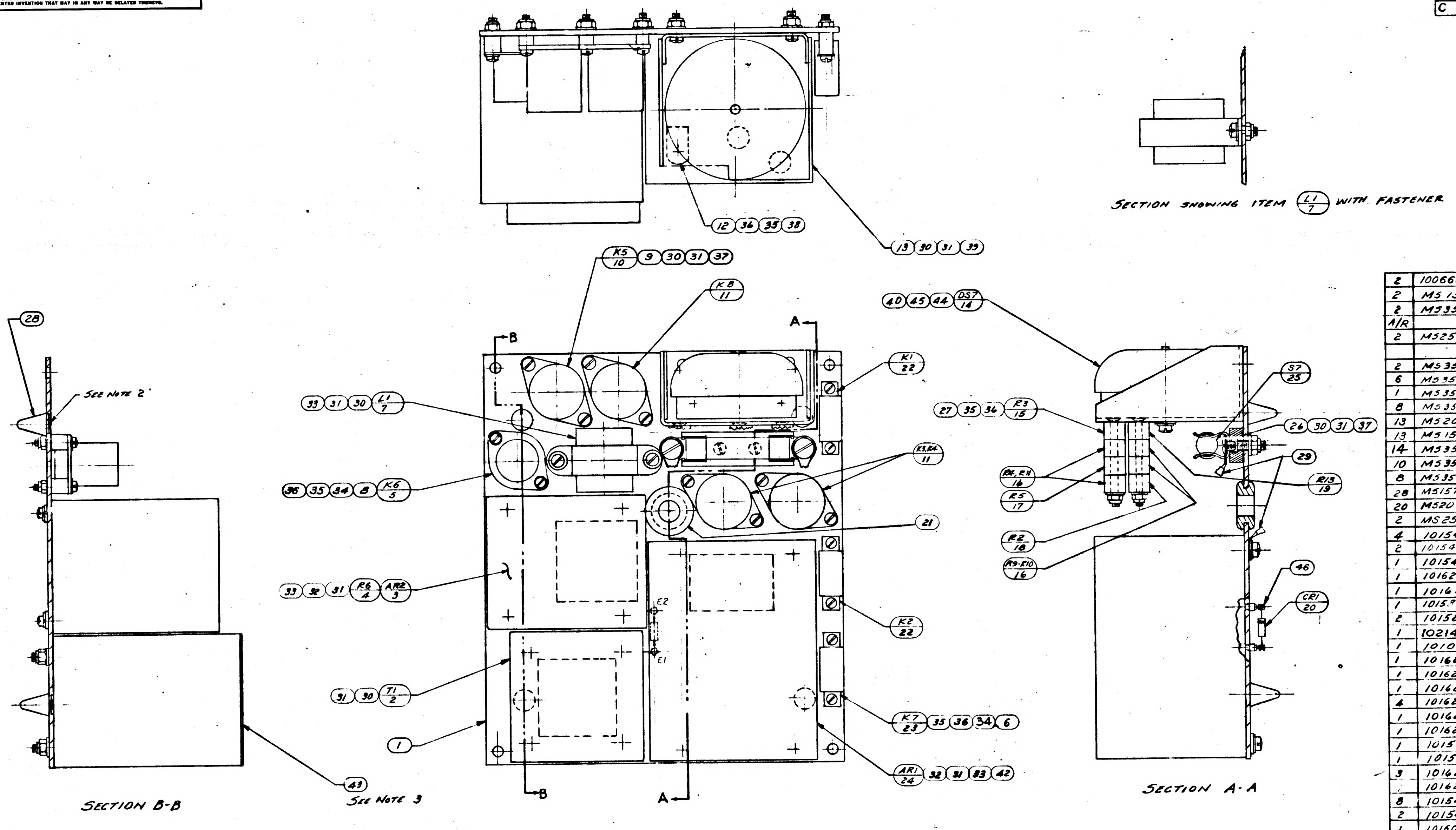
DRAWN P H Ferguson 8-11-64
CHECKED
APPROVED 2/24/65
APPROVED 2/26/65
APPROVED MIT
APPROVED MSC 3/2/65
DATE

LOWER MOUNTING PLATE
SUB ASSEMBLY
PORTABLE TEMP CONTROL

CODE IDENT NO.
SIZE D
DRAWING NO. 1021573
SCALE 1/1
SHEET 1 OF 1

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 16922						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 18596			4/23/65	WK
B		REVISED PER TDRR 19911		VV	8 June 65	WK
C		REVISED PER TDRR 21484		VV	30 Aug 65	WK



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A/R		SEE NOTE 3	GRAY FIBER SHEET	43
2	MS25036-2		TERMINAL LUG-CRIMP	42
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1	1016255		FLASHER	25
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1	1021499-9		GROMMET	21
1	1010362-001		DIODE IN645	20
1	1016252-1		RESISTOR – 735Ω ±.1%	19
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3	1016246		RELAY-4PDT	11
1	1016246		RELAY-4PDT	10
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2	1015430-3		SPACER	8
1	1016063		REACTOR	7
6	1015430-4		SPACER	6
1	1015833-10		RELAY-THERMAL TIME DELAY	5
1	1010267-SAT	SEE NOTE 6	RESISTOR	4
1	1016384		ALARM AMPLIFIER	3
1	1015997		TRANSFORMER-PWR STEP DOWN 115V:30V	2
1	1015427		LOWER MOUNTING PLATE	1

LIST OF MATERIALS

NOTES:

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3. INSULATE TOP OF TRANSFORMER WITH A .007 GRAY FIBER SHEET PER MIL-I-695A TYPE F WITH A MINIMUM DIELECTRIC STRENGTH OF 250 VOLTS PER MIL.
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MASTER

NEXT ASSY	USED ON
1900496	1900496

APPLICATION

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MATERIAL ~

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INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN P H Fergus 8-11-64
CHECKED
APPROVED Burt Hite 2/24/65
APPROVED J. Marston 1/26/65
APPROVED MIT W Kahn 2 Mar 65
APPROVED MSC G.C. 3/2/65
DATE

LOWER MOUNTING PLATE
SUB ASSEMBLY
PORTABLE TEMP. CONTROL

CODE IDENT NO.
SIZE D
DRAWING NO. 1021573
SCALE 1/1
SHEET 1 OF 1

1021573 C

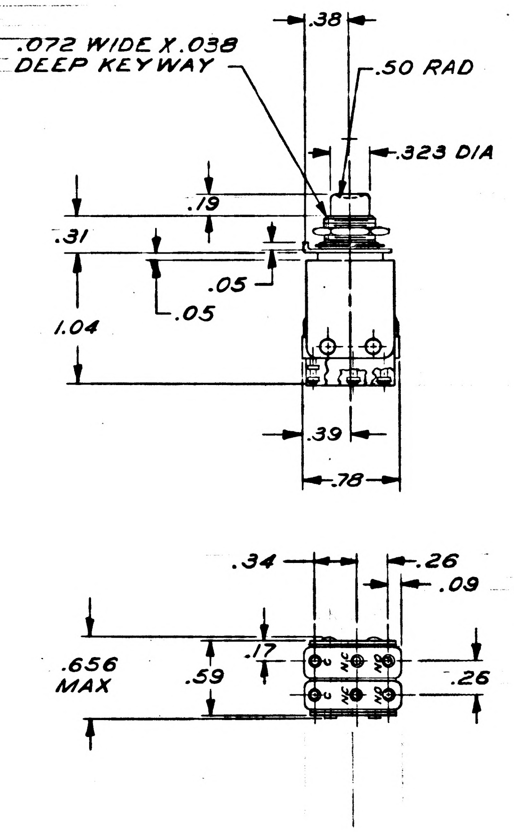
64

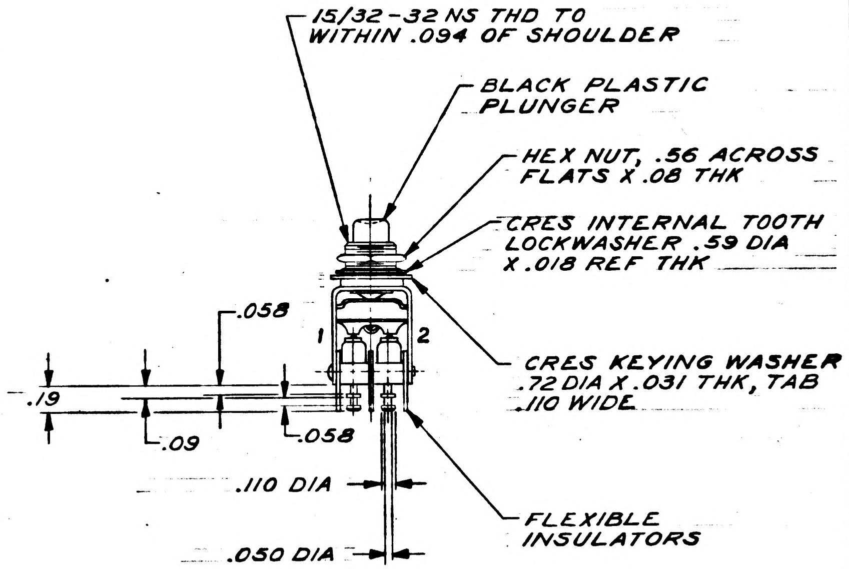
NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS		16921				
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 20216		VV	6/28/65	WK

REQUIREMENTS:

1. GENERAL:
   - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
   - B. SWITCHES SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-S-6743, EXCEPT AS, AND IN ADDITION TO THE REQUIREMENTS SPECIFIED BELOW.
   - C. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN MIL-Q-9858.
   - D. UNITS SHALL BE CAPABLE OF MEETING THE QUALIFICATION REQUIREMENTS OF ND 1002055.
   - E. MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED, PER MIL-STD-130, WITH THE TERMINAL IDENTIFICATION AND SWITCH NUMBERS (ON THE END OF EACH SWITCH) AS SHOWN. PACKAGES SHALL BE MARKED, PER MIL-STD-129, WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, LOT CODE, DATE OF MANUFACTURE OR DATE CODE, AND NASA PART NUMBER.
   - F. BASIC SWITCH SHALL BE PER MS 25085-1.
2. INSPECTION AND ACCEPTANCE:
   - A. MECHANICAL REQUIREMENTS:
     1. ACTUATING FORCE: 30 OUNCES APPROX
     2. TOTAL TRAVEL: .100 APPROX
     3. CONTACT ARRANGEMENT: 2 SPDT
     4. DIMENSIONS
   - B. ELECTRICAL CHARACTERISTICS:
     1. CONTACT VOLTAGE DROP: ONE MILLIVOLT MAX AT 100 MILLIAMPERES WHEN 2 TO 4 VDC IS APPLIED THRU A SUITABLE DROPPING RESISTOR.
     2. DIELECTRIC WITHSTANDING VOLTAGE: 1000 VRMS, 60 CPS
3. DESIGN REQUIREMENTS:
   - A. OPERATING LIFE (MIN): 100,000 CYCLES OF MECHANICAL OPERATION AND 25,000 CYCLES OF OPERATION WITH A RESISTIVE LOAD.
   - B. CONSTRUCTION: BASIC SUBMINIATURE SNAP-ACTION SWITCH PERMANENTLY MOUNTED IN A PUSH BUTTON HOLDER. HOLDER MATERIAL, CORROSION-RESISTANT STEEL. TERMINAL MATERIAL, BRASS SUITABLY PLATED FOR SOLDERING. CONTACT MATERIAL, SILVER.
   - C. TERMINAL STRENGTH: CAPABLE OF WITHSTANDING A 5 LB MIN AXIAL PULL.
   - D. STRENGTH OF ACTUATOR: 25 POUNDS MIN STEADY LOAD.
   - E. CONTACT RATINGS:
     1. 28 VDC
        - RESISTIVE LOAD: 5 AMPERES
        - INDUCTIVE LOAD: 3 AMPERES
     2. 125 VRMS
        - RESISTIVE LOAD: 5 AMPERES
     3. MAXIMUM INRUSH: 24 AMPERES





PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS .XX ± .015 .XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE REQUIREMENTS

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN 12/16/64
CHECKED 2/4/65
APPROVED 2/9/65
APPROVED J. M. Watson 2/26/65
APPROVED MIT 2/26/65
APPROVED MSC 3/2/65
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SWITCH, PUSHBUTTON
MOMENTARY

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
DRAWING NO. 1021575
SCALE NONE
SHEET 1 OF 1

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

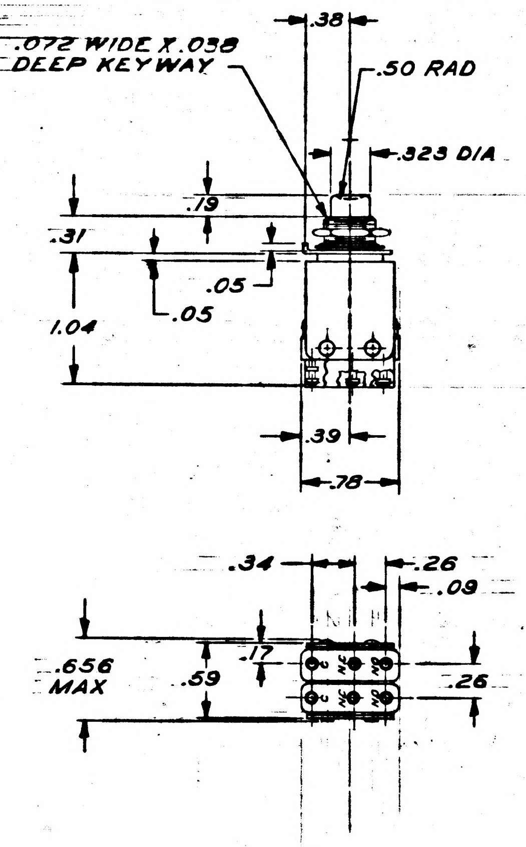
(r)

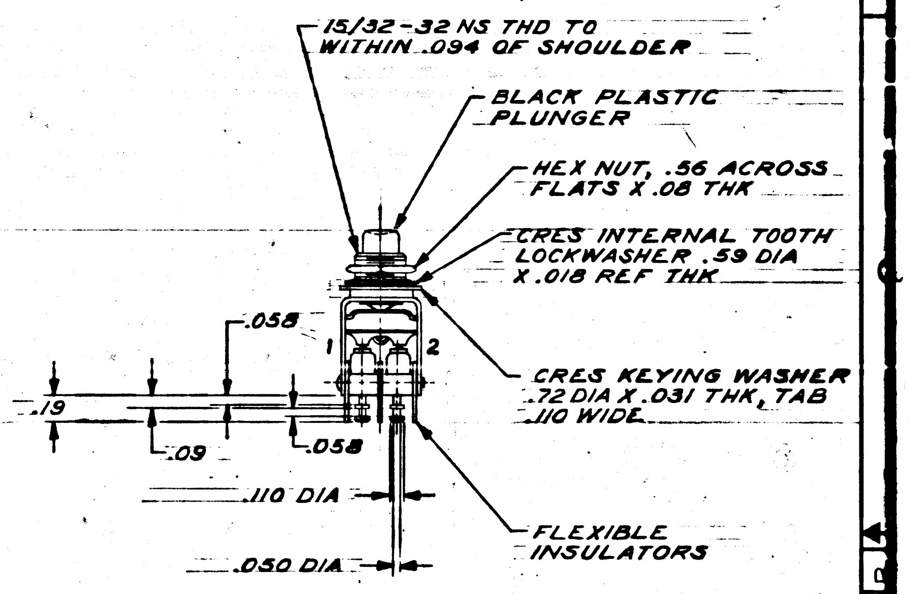
REVISIONS 1692r

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 20216		VV	6/25/65	WK
B		REVISED PER TDRR 21861		VV	30 [illegible] 65	WK

REQUIREMENTS:

1. GENERAL:
   - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
   - B. SWITCHES SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-S-6743, EXCEPT AS, AND IN ADDITION TO THE REQUIREMENTS SPECIFIED BELOW.
   - C. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN MIL-Q-9858.
   - D. UNITS SHALL BE CAPABLE OF MEETING THE QUALIFICATION REQUIREMENTS OF ND 1002055.
   - E. MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED, PER MIL-STD-130, WITH THE TERMINAL IDENTIFICATION AND SWITCH NUMBERS (ON THE END OF EACH SWITCH) AS SHOWN. PACKAGES SHALL BE MARKED, PER MIL-STD-129, WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, LOT CODE, DATE OF MANUFACTURE OR DATE CODE, AND NASA PART NUMBER.
   - F. BASIC SWITCH SHALL BE PER MS 25085-1.
2. INSPECTION AND ACCEPTANCE:
   - A. MECHANICAL REQUIREMENTS:
     - 1. ACTUATING FORCE: 40 OUNCES MAXIMUM
     - 2. TOTAL TRAVEL: .140 MAXIMUM, .080 MINIMUM
     - 3. CONTACT ARRANGEMENT: 2 SPDT
     - 4. DIMENSIONS
   - B. ELECTRICAL CHARACTERISTICS:
     - 1. CONTACT VOLTAGE DROP: ONE MILLIVOLT MAX AT 100 MILLIAMPERES WHEN 2 TO 4 VDC IS APPLIED THRU A SUITABLE DROPPING RESISTOR.
     - 2. DIELECTRIC WITHSTANDING VOLTAGE: 1000 VRMS, 60 CPS
3. DESIGN REQUIREMENTS:
   - A. OPERATING LIFE (MIN): 100,000 CYCLES OF MECHANICAL OPERATION AND 25,000 CYCLES OF OPERATION WITH A RESISTIVE LOAD.
   - B. CONSTRUCTION: BASIC SUBMINIATURE SNAP-ACTION SWITCH PERMANENTLY MOUNTED IN A PUSH BUTTON HOLDER. HOLDER MATERIAL, CORROSION-RESISTANT STEEL. TERMINAL MATERIAL, BRASS SUITABLY PLATED FOR SOLDERING. CONTACT MATERIAL, SILVER.
   - C. TERMINAL STRENGTH: CAPABLE OF WITHSTANDING A 5 LB MIN AXIAL PULL.
   - D. STRENGTH OF ACTUATOR: 25 POUNDS MIN STEADY LOAD.
   - E. CONTACT RATINGS:
     - 1. 28 VDC
       - RESISTIVE LOAD: 5 AMPERES
       - INDUCTIVE LOAD: 3 AMPERES
     - 2. 125 VRMS
       - RESISTIVE LOAD: 5 AMPERES
     - 3. MAXIMUM INRUSH: 24 AMPERES





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MASTER

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MATERIAL
SEE REQUIREMENTS

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN	R. J. J.	12/16/64
CHECKED	[illegible]	2/6/65
APPROVED	[illegible]	2/4/65
APPROVED	J. M. Watson	2/26/65
APPROVED MIT	W. Kupfer	25 [illegible] 65
APPROVED MSC	[illegible]	3/2/65
		DATE

SWITCH, PUSHBUTTON
MOMENTARY

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	DRAWING NO.
80230	C	1021575
SCALE NONE		SHEET 1 OF 1

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REVISIONS 16921

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED

REQUIREMENTS:

1. GENERAL:
   - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
   - B. SWITCHES SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-S-6743, EXCEPT AS, AND IN ADDITION TO THE REQUIREMENTS SPECIFIED BELOW.
   - C. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
   - D. UNITS SHALL BE CAPABLE OF MEETING THE QUALIFICATION REQUIREMENTS OF ND 1002055.
   - E. MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED, PER MIL-STD-130, WITH THE TERMINAL IDENTIFICATION. PACKAGES SHALL BE MARKED, PER MIL-STD-129, WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, LOT CODE, DATE OF MANUFACTURE OR DATE CODE, AND NASA PART NUMBER (DRAWING NUMBER AND REVISION LETTER).
   - F. BASIC SWITCH SHALL BE PER MS 25085-1.
2. INSPECTION AND ACCEPTANCE:
   - A. MECHANICAL REQUIREMENTS:
     - 1. ACTUATING FORCE: 30 OUNCES APPROX
     - 2. TOTAL TRAVEL: .100 APPROX
     - 3. CONTACT ARRANGEMENT: 2 SPDT
     - 4. DIMENSIONS
   - B. ELECTRICAL CHARACTERISTICS:
     - 1. CONTACT VOLTAGE DROP: ONE MILLIVOLT MAX AT 100 MILLIAMPERES WHEN 2 TO 4 VDC IS APPLIED THRU A SUITABLE DROPPING RESISTOR.
     - 2. DIELECTRIC WITHSTANDING VOLTAGE: 1000 VRMS, 60 CPS
3. DESIGN REQUIREMENTS:
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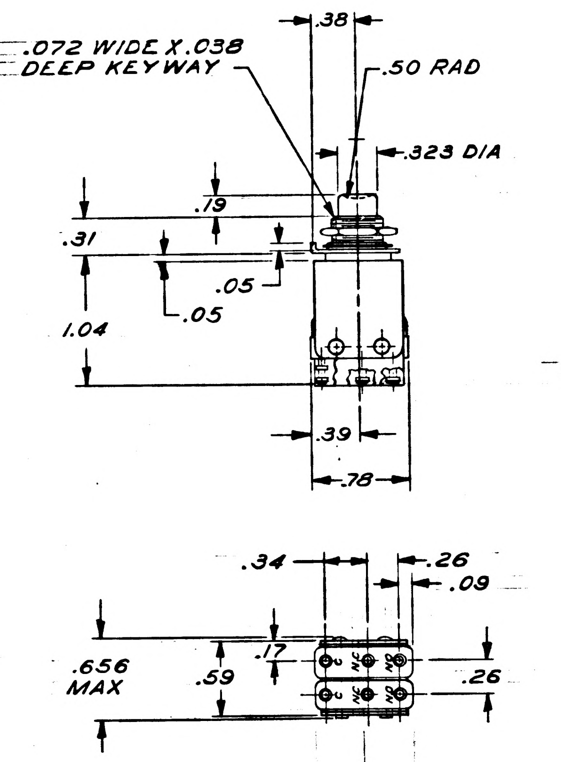

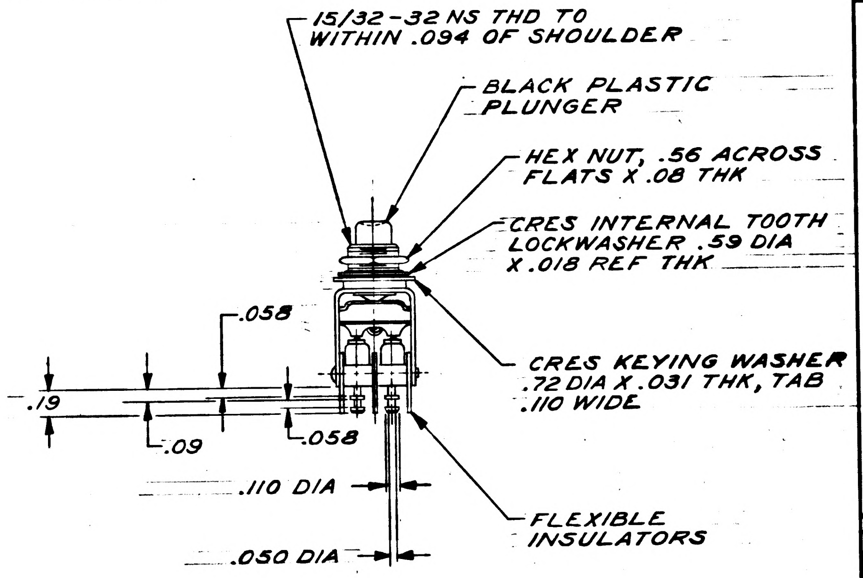

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SPECIFICATION CONTROL DRAWING

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SCALE NONE		SHEET 1 OF 1

MASTER